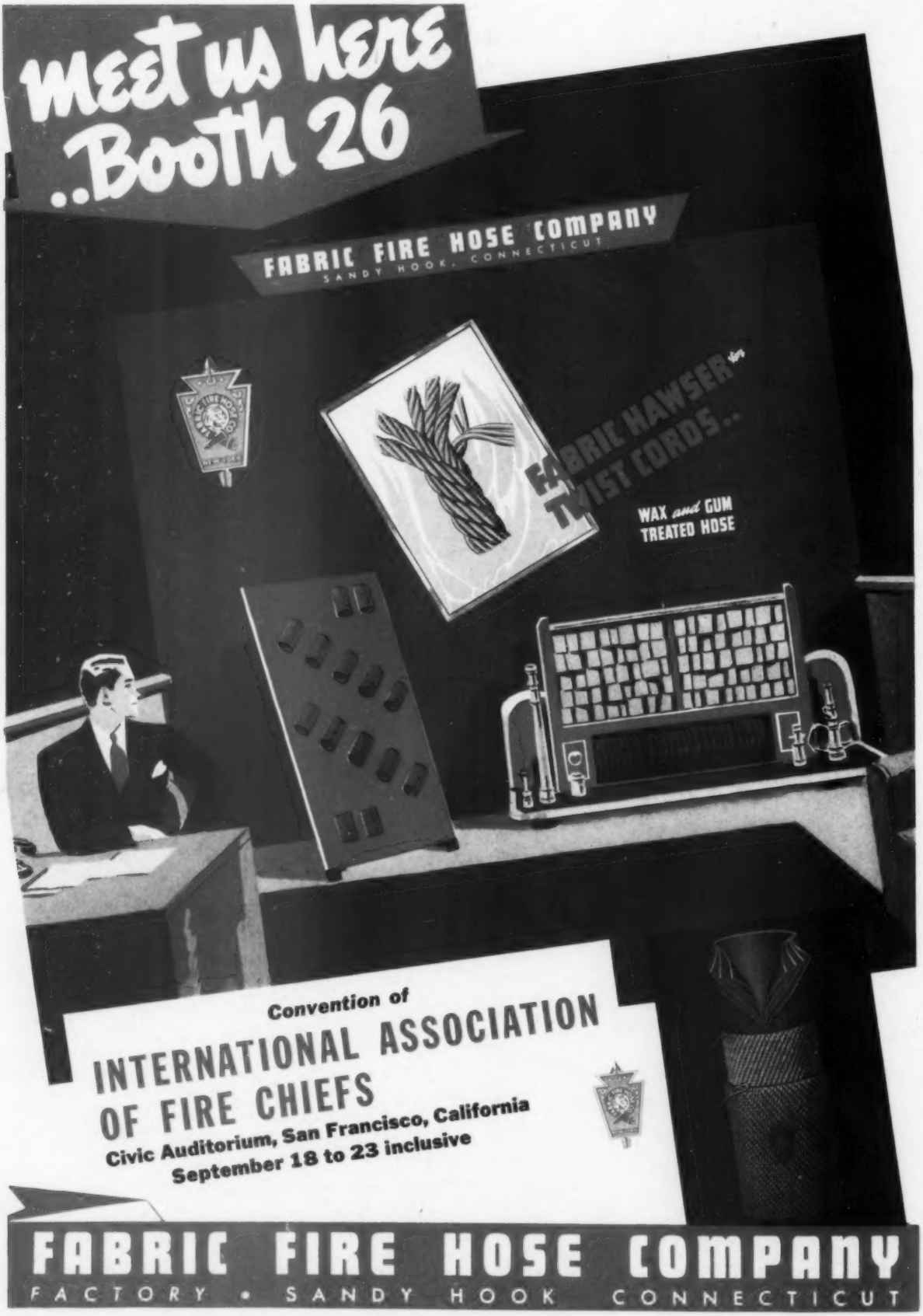
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

SEPTEMBER
1939



FIRE ENGINEERING, September, 1939. Vol. 92. No. 9. Published monthly by Case-Shepperd-Mann Publishing Corporation, 24 W. 40th St., New York, N. Y. Subscription price: U. S. and Canada, $2 a year; Foreign, $3; single copies, 25c. Entered as second-class matter April 15, 1929, at the Post Office, New York, N. Y., under the Act of March 3, 1879.

HERE'S A REAL SWEETHEART FOR EVERY FIRE FIGHTING JOB

THE FAMOUS INDIAN FIRE PUMP..

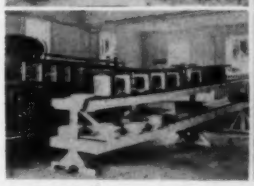
USERS say an INDIAN FIRE PUMP is a "Honey of an Outfit." This is another way of stating it's the most efficient, all purpose piece of hand equipment on the truck. In a typical city of medium size, out of a total of 2506 fires hand pump tanks were used 664 times and 2½ inch hose lines only 141 times. A ratio of almost 5 to 1 for INDIANS.

There is nothing like an INDIAN to get at awning, chimney and roof fires, rubbish, room or partition fires and grass and spot fires. The clear water used in INDIANS cause no damage as do the corrosive acids of chemical extinguishers. 5 gal. tanks are quickly refilled, need no inspection and are always ready for use.

A DIFFERENT USE EVERY DAY

ROOF AND AWNING FIRES

GRASS AND RUBBISH FIRES



READY FOR ANY KIND of CALL

Could Not Get Along Without INDIANS!

Read what A. R. Berger, Fire Chief at Georgetown, Conn., says about their INDIANS.

D. B. Smith & Co., Utica, N. Y. Georgetown, Conn.

Gentlemen: I don't know what we would do without the INDIAN FIRE PUMP in our department. If it were not for the Indians, many thousands of dollars worth of property would have been destroyed here in our community. Our firemen use the Indian in a house in place of the soda and acid extinguisher as they are just as effective and do not spoil the contents of the house. Our department has 4 Indians and I honestly say that we could not get along without them. Yours very truly,

A. R. BERGER, Fire Chief.

REMEMBER THE NAME INDIAN · THE SAVAGE FIRE FIGHTER ·

Send for our latest catalog illustrating and describing INDIAN FIRE PUMPS and containing many letters from enthusiastic users.

D. B. SMITH & CO., 406 Main St., Utica, N. Y.

PACIFIC COAST AGENTS:

HERCULES EQUIPMENT & RUBBER CO.
550 Third St., San Francisco, Cal.

I. A. SIEGRIST CO.
2224 First Ave. S., Seattle, Wash.

WESTERN LOGGERS' MACHINERY CO.
202 S. W. 4th St., Portland, Ore.

ROY G. DAVIS COMPANY
617 East Third St., Los Angeles, Cal.

ONLY M

Mack Type 80, 750-gallon pumper serving Waltham, Mass.

MACK HAS THE FACILITIES TO

Please mention FIRE ENGINEERING *when writing advertisers*

Mack

..AMONG ALL FIRE ENGINE PRODUCERS BUILDS, IN ITS OWN PLANTS, SUCH VITAL PARTS AS... THESE

ENGINES • CLUTCHES
TRANSMISSIONS
FRONT AND REAR AXLES
STEERING GEARS
FRAMES • BRAKES
SHEET METAL PARTS
BODIES

● No other maker of fire apparatus can exercise the same rigid control which Mack does, over the quality and workmanship of every interrelated part. For during 28 years of leadership, Mack has maintained the policy of outright manufacture, from raw materials to finished unit.

The result is unequalled power and efficiency . . . each Mack unit built specifically for fire-fighting work. And backed by the most complete facilities in the industry—for quick, money-saving service when it's needed!

FIRE ENGINE DIVISION
MACK MANUFACTURING CORPORATION
NEW YORK, N. Y.

ES TO BUILD THE FINEST IN FIRE APPARATUS..AND DOES!

ATL

OTHERS have manufactured, others have engineered, but few can equal the position of outstanding achievement merited by an organization which has SPECIALIZED. This is the ATLAS organization. Rooted in the designing and manufacturing of the Atlas Products, specialization has "branched" its store of effectiveness about the Atlas Program of instructive LIFE SAVING—wherein—from the first attempt to train the "rookie"—to the time when dexterity and confidence are displayed by the skilled firemen. IT'S ATLAS ALL THE WAY.

DRILL TOWER TRAINING WITH THE ATLAS DRILL TOWER SAFETY TRAINING NET

The unbeatable training net designed to train firemen in the rescue work they will be responsible for on the field of action, while insuring full protection from injuries in case of accidental falls.

USING THE ATLAS LIFE BELT FOR SAFETY AND EFFICIENCY DURING RESCUE WORK

A "certified and tested" Life Belt, guaranteed to work effectively at the time and place needed.

THE ATLAS LIFE NET FOR LIFE SAVING

When normal rescue work is hindered by uncontrollable fires, Fire Departments must display their "always be prepared" policy, in the form of a true "Life Saving" Net, which can gratify the skilled endeavors of their trained men.

ATLAS FIRE EQUIPMENT COMPANY

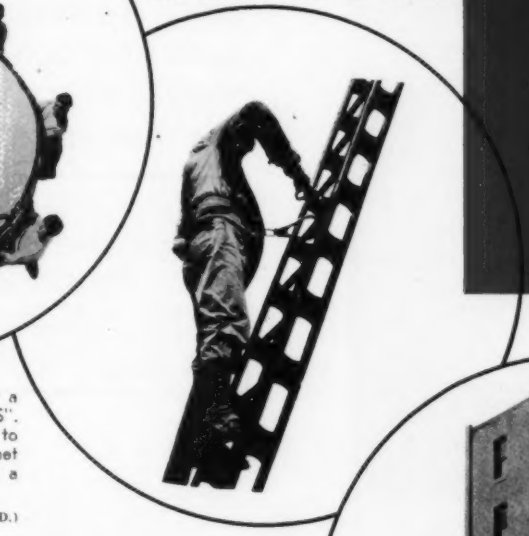
Kindly mention FIRE ENGINEERING *when writing advertisers*

AS

Safety Value for a Life Belt is essential; PRACTICABILITY is compulsory. Here is where the Atlas Life Belt triumphs. Capable of being used effectively for LADDER SAFETY, ROPE SLIDING, and RESCUE WORK, this "certified and tested" Life Belt is a TRIPLE SAFETY THREAT.

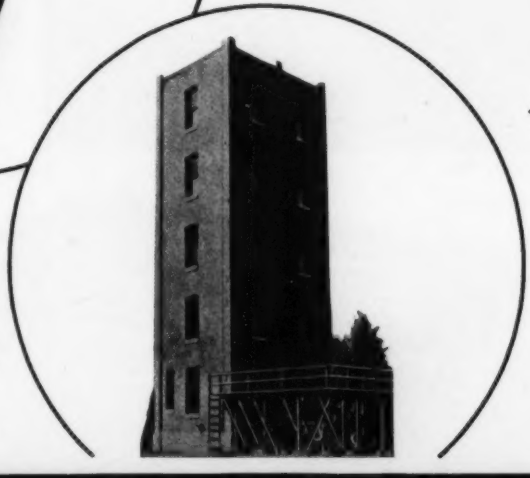
FIRE CHIEFS:

Don't fail to see ATLAS Equipment in Booth No. 25 at the Convention



The answer to "When is a life saving net a LIFE SAVING Net?" is found in the "ATLAS". When ravaging fires confine escape solely to windows and roofs of houses, it is this net only, which can cheat death, by insuring a safe landing to any jumper.

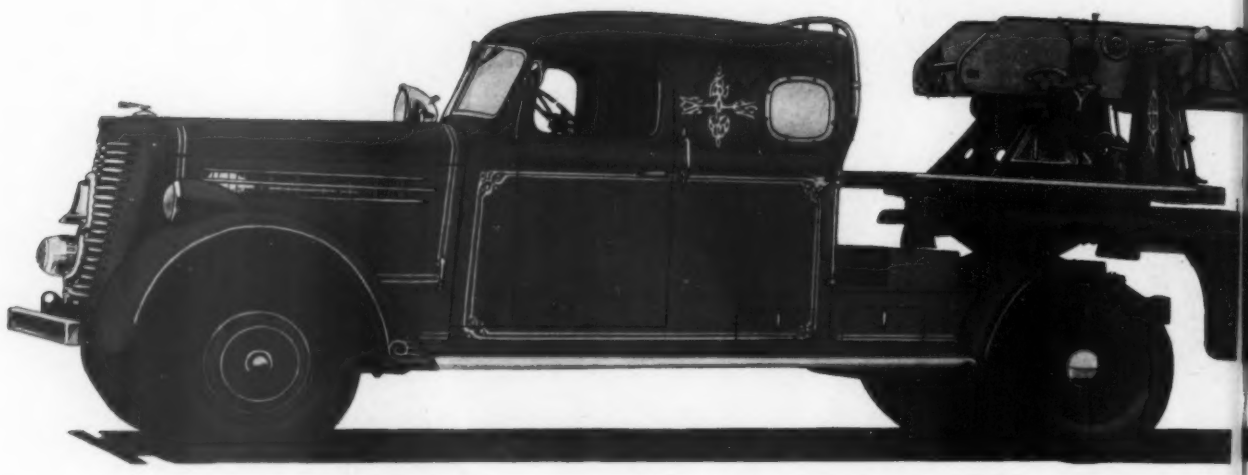
(Photo courtesy Schenectady, N. Y., F.D.)



With its "Synchronizing Assembly", allowing a man to get up and walk away after a fall from any part of the Drill Tower, this Safety Training Net has paved the way to sound, instructive training, mainly through elimination of FEAR OF INJURIES. Train your men the Modern Fire Department Way—the Progressive Way —the ATLAS WAY.

(Photo courtesy Schenectady, N. Y., F.D.)

22 Warren Street, New York, N. Y.



PIRSCH LADDE

PIRSCH LADDERS, WHETHER THEY ARE MADE OF WOOD OR METAL, HAVE BEEN "TAKING IT" FOR A GOOD MANY YEARS IN ACTUAL FIRE SERVICE.

THE FIVE-WAY, OR QUINTUPLE, COMBINATION IS ANOTHER PIRSCH INNOVATION

ORIGINATED BY PIRSCH THE LONG WHEELBASE JUNIOR AND INTERMEDIATE AERIALS WITH 500 TO 1000 G.P.M. PUMPS ARE PROVING THEMSELVES IN FIRE SERVICE.

City of St. Paul, Minn., Pirsch Intermediate Aerial Equipped With 1000 Gal. Pump.

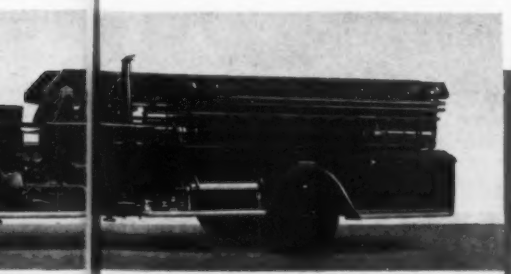
City of Champaign, Ill., Pirsch Intermediate

PETER PIRSCH
KENOSHA.

DERS "CAN TAKE IT"

TO-DAY'S PIRSCH AERIAL LADDERS HAVE A HALF CENTURY OR MORE OF LADDER BUILDING EXPERIENCE BEHIND THEM.

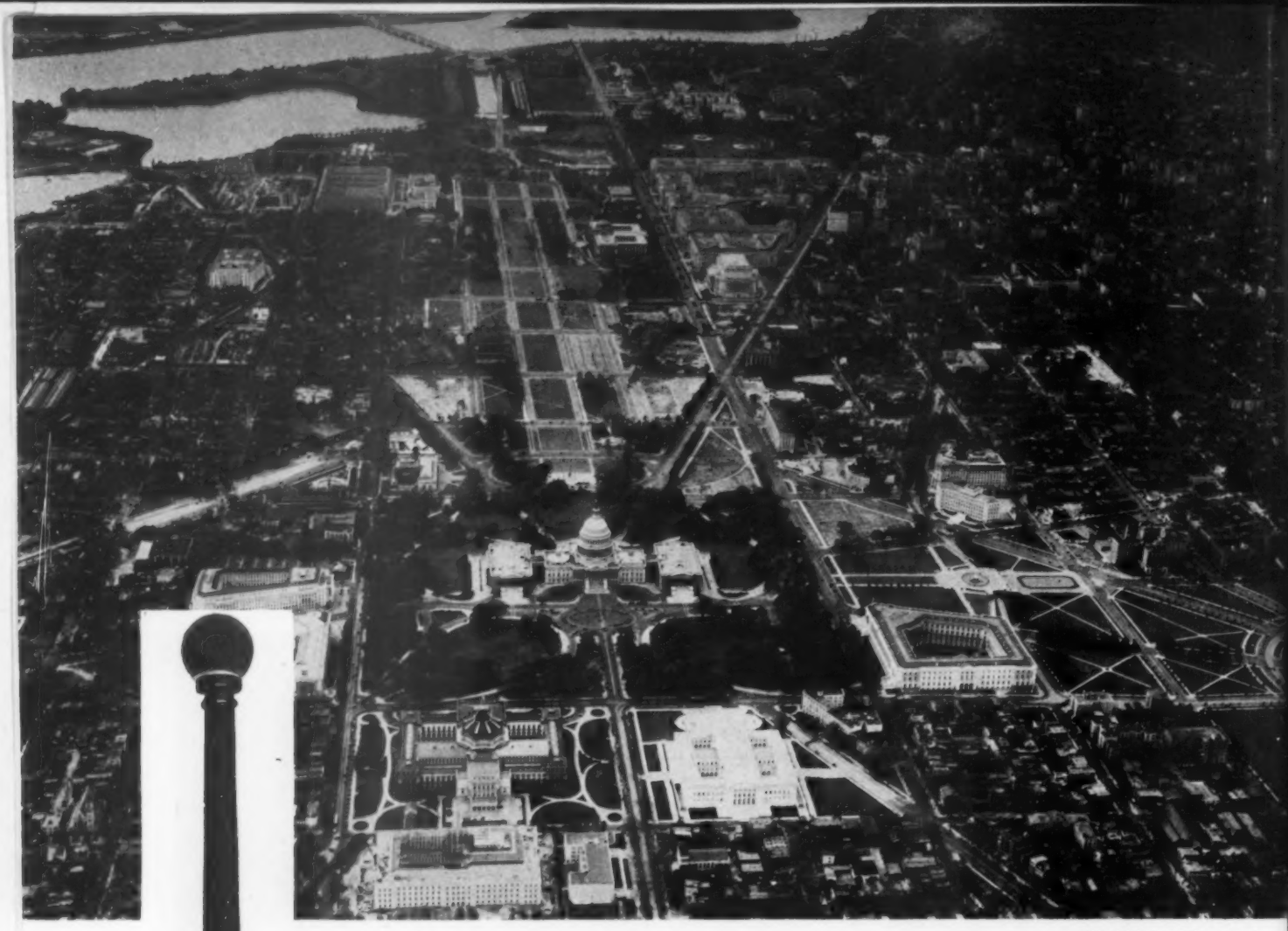
PERFORMANCE DOES COUNT! SINCE AMERICA'S FIRST ALL-POWERED LADDER WAS BUILT IN 1930 BY PIRSCH MANY REPEAT ORDERS (INCLUDING SOME SECOND AND THIRD REPEAT ORDERS) HAVE BEEN PLACED FOR PIRSCH AERIALS—



Aerial Equipped With 750 Gal. Pump.

City of Pittsburg, Kans., Pirsch Intermediate Aerial Equipped With 750 Gal. Pump.

CH & SONS CO.
WISCONSIN



Fairchild Aerial Surveys, Inc.

Three-Fold Fire Alarm Box on Type U1000-6 Pedestal

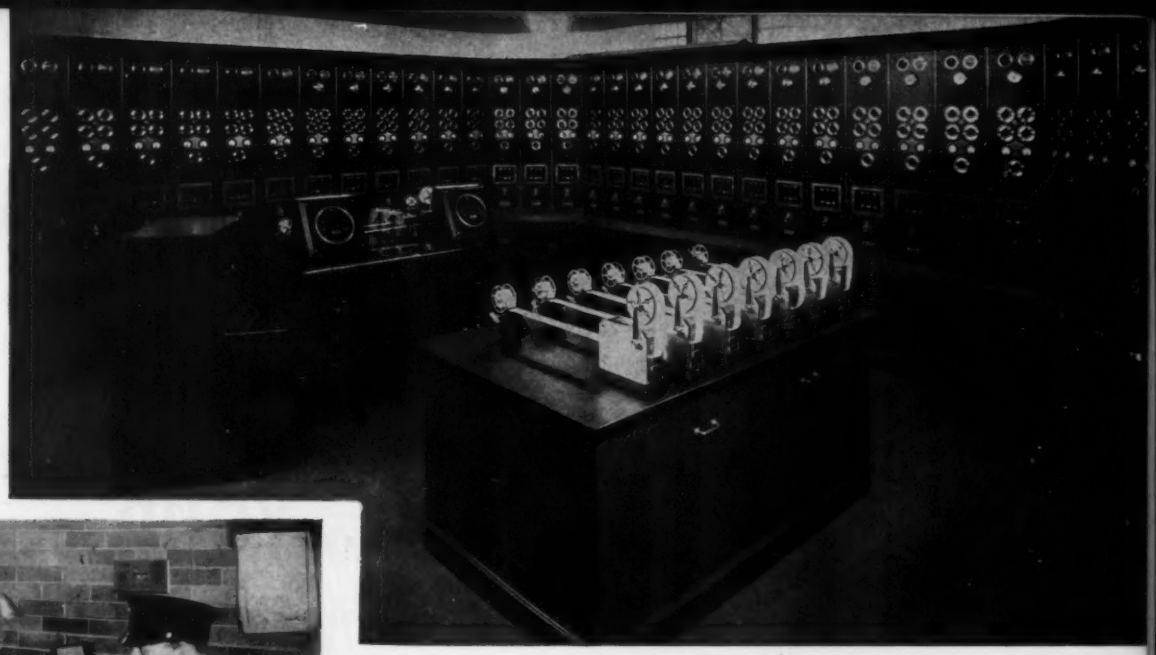
WASHINGTON . . .

the Heart of the Nation

Again Selects the Gamewell Fire Alarm System

THE GAMEWELL COMP

Typical Gamewell Fire Alarm Central Station Three-Fold Type



The Heart of the Alarm System

Modern Fire Station Watch Desk, with Alarm, Recording, and Vocalarm Equipment

Growth in population, values, and the fire hazards incidental thereto recently impelled the Nation's Capitol City to reconstruct the municipal fire alarm system. Confidence in Gamewell products inspired by the service record of the existing Gamewell system originally installed in 1875, resulted in the award being made to Gamewell for a Three-Fold Fire Alarm System of 124 circuits capacity. In addition to the public protection afforded by the municipal fire alarm system, 33 Federal buildings and properties use Gamewell systems and equipment for interior protection.

Regard for public safety imposes a very definite responsibility upon those who offer—or select—equipment for the protection of life and property. With the accumulated experience of more than seventy years, with the established service record of its systems, and with a full realization of the responsibility involved, The Gamewell Company confidently offers its products and services.

A SYSTEM FOR EVERY CITY

MPANY, NEWTON UPPER FALLS, MASS.

50% GREATER PROTECTION

IS NOW MADE AVAILABLE TO YOUR CITY, BY

AMERICAN-LAFRANCE

Many cities have purchased the 100 foot Aerial ladder realizing that only limited coverage for rescue work was possible on the taller buildings. The American LaFrance HD-150 Aerial ladder was designed at the request of many Fire Chiefs, to increase the coverage for the added protection the 150 foot ladder would give. It possesses the same features of construction that give the American LaFrance HD-100 (100 feet) and HD-125 (125 feet) their outstanding qualities of stability, safety, and ease of operation.

The all-steel 150 foot ladder is completely hydraulic power operated with one man, simplified control. Each ladder section is electrically welded to form a single unit and every section has dual cables.

For rescue work or as a water tower, it has no equal for stability and versatility with an operating range of 10 to 150 feet.

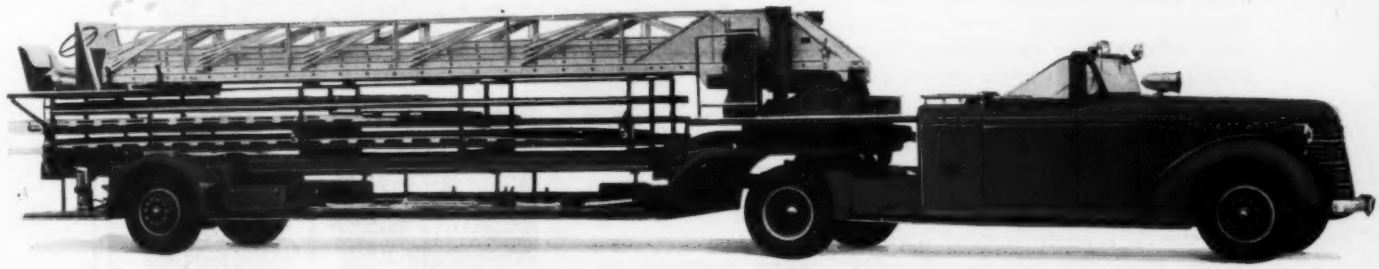
There is SAFETY IN STEEL

THEIR SAFETY, TOO, IS
YOUR RESPONSIBILITY

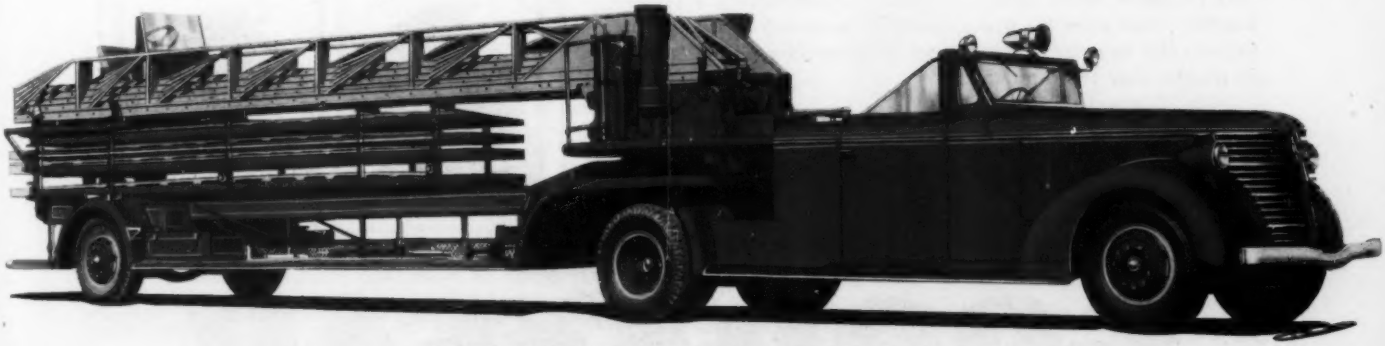
This 100 foot ladder is fully extended—yet offers no protection above the 8th or 9th floor.

Those people on the 10th, 12th or 15th floor expect protection also—are you equipped to provide it?

The HD-125 or HD-150 will provide this increased protection. If you are developing a program to modernize or increase the equipment in your department, consult our representative for constructive information.



MODEL HD-125 with 125 foot Aerial Ladder
(Only 53′—2″ overall length)



MODEL HD-150 with 150 foot Aerial Ladder
(Only 54′—8″ overall length)

AMERICAN-LA FRANCE-FOAMITE CORPORATION

Engineers and Manufacturers

ELMIRA, N. Y.

THE NEW 1940

ALL-WEATHER

Now We've Built MORE MILES into the World's Safest Tread

FOR EXTRA LONG WEAR AT NO EXTRA COST!

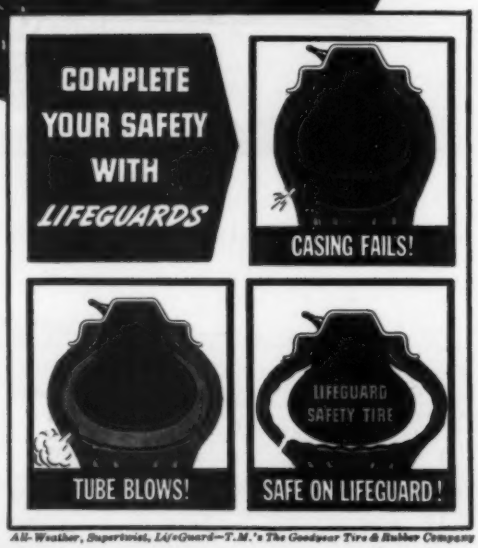
LONG FIRST CHOICE FOR SAFETY in modern fire departments, Goodyear's famous All-Weather tire now becomes an even better buy as the result of *two* major engineering improvements that insure still greater mileage-with-safety!

GREATER IMMUNITY FROM SEPARATION — a tougher bond between tread and body — secured by a new method of building rubber into tires called "multiple compounding."

GREATER ENDURANCE, HIGHER RESISTANCE TO HEAT — from use of new low stretch Supertwist cord — a stronger, more compactly-twisted cord that, ply for ply, gives greater resistance to bruises and blowouts with less heat-generating bulk — hence a cooler-running tire.

THIS STURDIER, MORE COMPACT CONSTRUCTION makes a firmer, tougher, less stretchy tire splendidly armored against cracking — a tire that far excels former long-traveling All-Weathers in trouble-free tread mileage.

YET IT DOESN'T COST A PENNY MORE than you have been paying. If you want the safest, longest-wearing tire ever sold for the money, specify Goodyear's new 1940 All-Weather on your next tire order.



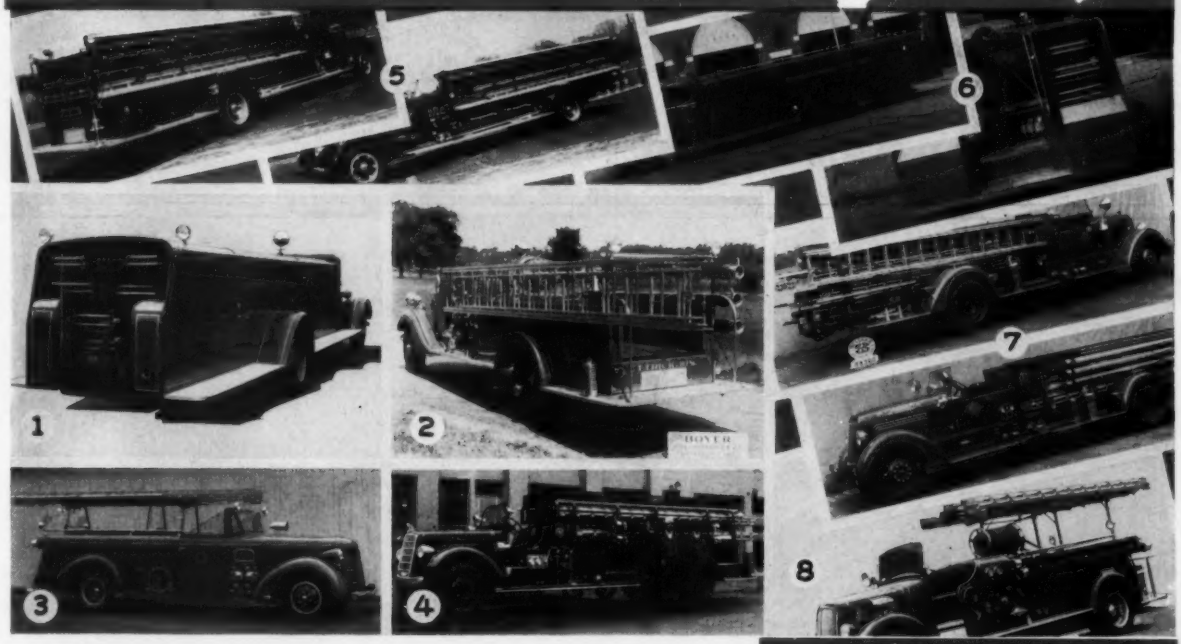
All-Weather, Supertwist, LifeGuard—T.M.'s The Goodyear Tire & Rubber Company

THE GREATEST NAME IN RUBBER

GOODYEAR

FIRE CHIEFS FROM COAST TO COAST ARE DEMANDING ALUMINUM LADDERS

The many outstanding advantages of ALUMINUM LADDERS have been quickly recognized by progressive fire chiefs everywhere. As a result, ALUMINUM LADDERS are now used on fire trucks throughout the country. Shown in the illustration are some of the many installations.



1. Fredonia, N. Y. (Cayasler Mfg. Co.). 2. Ettrick, Wis. (Boyer Fire Apparatus Co.). 3. East Point, Ga. (American-La France & Foamite Industries, Inc.). 4. Vancouver, Wash. 5. Princeton, Ill. (National Fire Apparatus Co.). 6. Silver Creek, N. Y. (Cayasler Mfg. Co.). 7. Nogales, Ariz. (The Seagrave Corporation). 8. Parma, Ohio (Ahrens-Fox Fire Engine Co.)

ACCLAIMED BY LEADING FIRE CHIEFS:

The advantages of ALUMINUM LADDERS are best described by men who have tested them under actual fire fighting conditions. Here are two of the many recommendations we have on file:

"In my opinion, aluminum ladders have many advantages over the old type ladders. They are light in weight, easy to handle, much stronger in every sense and require no periodic refinishing in any way of varnishing or the replacement of splintered sections of rungs."—*Fire Marshal William J. Cawker, Topeka (Kansas) Fire Department.*

"I will admit that we were a little skeptical about this type of ladder when we bought the truck but after using them we are completely sold on them. We do not hesitate to recommend them to anyone interested in buying new ladders." —*William F. Cron, Director of Public Safety, Titusville, Pennsylvania.*

When ordering new trucks or replacement ladders, specify ALUMINUM LADDERS.

Lightest Weight Ladder Made

Not all ladders made of aluminum weigh the same. Our Aluminum Ladders are the lightest on the market, and that is why our prices are the lowest. Before you buy, compare the typical weights below with those of other ladders:

TWO SECTION LADDERS

30 ft.	95 lbs.
40 ft.	130 lbs.
45 ft.	175 lbs.

THREE SECTION LADDERS

45 ft.	182 lbs.
50 ft.	220 lbs.
55 ft.	242 lbs.

Aluminum Ladder Company

200 ADAMS STREET
TARENTUM, PENNA.

GET THE FACTS ON ALUMINUM LADDERS FIRST HAND

We are to attend the Round Table discussion on Aluminum Ladders for fire departments at the

I. A. F. C. CONVENTION

San Francisco, Sept. 20-23

SEE MOVING PICTURES OF ALUMINUM LADDERS AT BOOTH NO. 10

AHRENS-FOX APPARATUS *Protects*

●"MUCH IMPRESSED BY SMOOTH PERFORMANCE"

—says Chief Engineer Charles Brennan of the San Francisco Fire Department.

CITY AND COUNTY OF SAN FRANCISCO

FIRE DEPARTMENT
CHIEF ENGINEER

August 7, 1939

Mr. Harold LeBlond, President,
Ahrens-Fox Fire Engine Co.,
Cincinnati, Ohio.

Dear Sir:

Your Mr. M. O. Graf is leaving for home after the successful completion of the tests and demonstrations of the new aerial truck built by your firm and delivered to this Department.

In this connection, I want to say that Mr. Graf has made a very favorable impression on all with whom he came in contact here and that he conducted all demonstrations and the training of our men in a very complete and thorough manner, and to our fullest satisfaction.

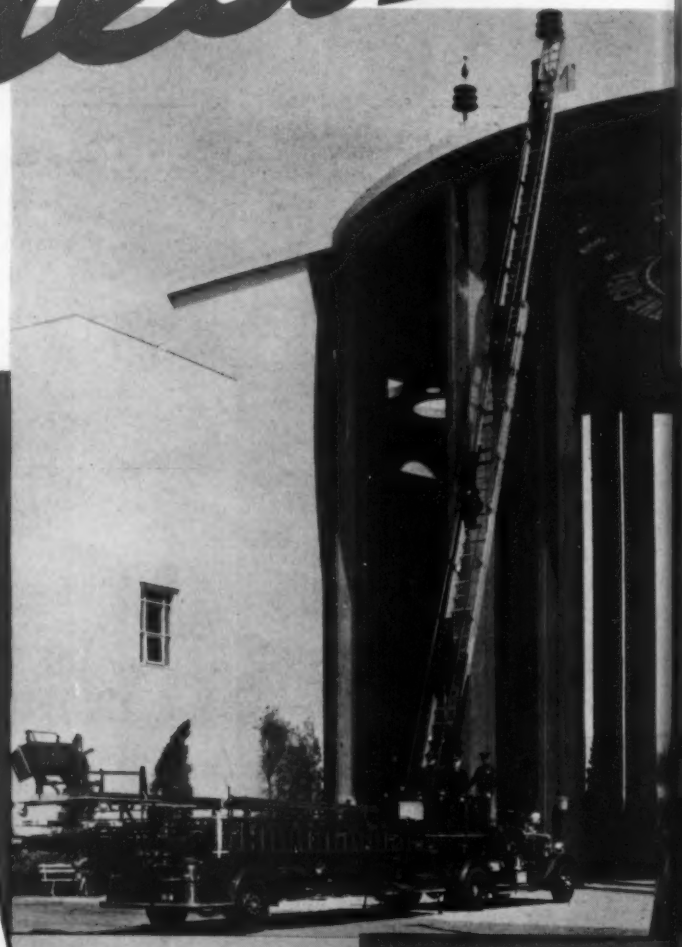
It will be of interest to you to know that the two new trucks are attracting much favorable attention; particularly the one which we placed in service on Treasure Island, and especially from visiting fire chiefs and fire officials, who are much impressed by its smooth performance, and we are taking great pride in demonstrating it at every opportunity.

Hoping that you will come out here during the Fire Chiefs' Convention, and with kindest personal regards and best wishes, I am

Sincerely yours,

Charles J. Brennan

Charles J. Brennan,
Chief Engineer, S.F.F.D.



● Demonstrating one of the new Ahrens-Fox Aerials in service at the San Francisco Exposition. Photo shows the rigidity of the smoothly operating Ahrens-Fox Aerial Truck fully extended.

● General view of Ahrens-Fox Aerial Truck in front of one of the displays at the San Francisco International Exposition

AHRENS-FOX QUALITY

AHRENS-FOX BUILDS EVERY TYPE OF

Both World's Fairs!

AT New York *and* at San Francisco the Fire Departments are protecting the great Expositions of 1939 with the help of Ahrens-Fox Fire Apparatus.

The extraordinary hazards of life and property involved in the great concentrations of values on Treasure Island and in Flushing Meadows Park have received the intensive study of the best fire protection engineers. So the selection of Ahrens-Fox Apparatus for the use of the professional fire fighters assigned to these Battalions is a real tribute to Ahrens-Fox design and quality.

The five units comprising the 55th or World's Fair Battalion of the Fire Department of the City of New York are exclusively Ahrens-Fox equipped.

The Exposition Battalion of the San Francisco Fire Department has two new Ahrens-Fox Aerial Ladder Apparatus of the latest type to cover the lofty heights of the beautiful structures of Treasure Island.

Inspect these modern units of Fire Apparatus when you attend the convention of the International Association of Fire Chiefs in San Francisco and visit New York's "World of Tomorrow".

THE AHRENS-FOX FIRE ENGINE CO., CINCINNATI, OHIO

● Five pieces of Ahrens-Fox fire apparatus protect the New York World's Fair. Photo shows one of the 1,000-gal. high-pressure piston pumpers.

● Group of New York World's Fair officials inspecting the fire-fighting equipment built especially for the "World of Tomorrow" by The Ahrens-Fox Fire Engine Company.

AHRENS-FOX QUALITY

OF PUMP FOR EVERY KIND OF SERVICE!

FIRE PREVENTION WEEK · OCTOBER 8-14

Illustration from National Board of Fire Underwriters' 1939 poster

★ In planning and carrying out Fire Prevention Week programs the fire department naturally is the leading factor. This year, as in the past, A.D.T. offers to fire department officials its full cooperation in this annual effort to reduce fire losses.

In commercial and industrial establishments it is of particular importance to eliminate, through special Fire Prevention Week checkups, needless hazards that have developed during the year. A.D.T. will be glad to cooperate with you in urging owners to conduct such surveys, for which the National Board of Fire Underwriters has prepared special self-examination blanks. These blanks are available, without obligation, at every A.D.T. Central Station.

A.D.T. also will be glad to cooperate with you in recommending improved protection for any occupancy where you feel present provisions are inadequate. If you have any "fire traps" in your town, where belated discovery or a delayed alarm would mean a hopeless battle, let us know and we shall be glad to consult the owners about automatic protection to assure immediate discovery and prompt and accurate alarms.

For any assistance or cooperation you may desire, please do not hesitate to get in touch with your nearest A.D.T. office.

A.D.T. ELECTRIC PROTECTION SERVICES

Controlled Companies of **AMERICAN DISTRICT TELEGRAPH CO.** *155 Sixth Avenue, New York, N. Y.*

CENTRAL STATION OFFICES IN ALL PRINCIPAL CITIES OF THE UNITED STATES

A·D·T

Electric Protection Services

AGAINST FIRE · BURGLARY · HOLDUP

A NATION-WIDE ORGANIZATION

KEROTEST

EMERGENCY CUTTING EQUIPMENT

MEETS A LONG FELT NEED FOR A LIGHT, PORTABLE OXYGEN-ACETYLENE CUTTING UNIT THAT IS ABSOLUTELY SAFE AND RELIABLE UNDER ALL CONDITIONS!

When steel bars the way to effective fire fighting and fast action is imperative, the Kerotest Emergency Cutting Outfit will be found invaluable. Compact and self-contained, this acetylene cutting outfit is ready at a moment's notice to provide the wearer with a steel cutting tool of remarkable efficiency and capacity. The complete unit consists of 2 high pressure cylinders, a non-back-fire cutting torch connected by Siamese Hose with regulators and pressure gauges—all mounted on a special waterproof carrying vest of extra strong construction. It has extraordinary cutting capacity of 80 to 90 lineal inches of one inch thick plate. Cylinders are renewable and quickly replaceable.

Already approved by the leading fire chiefs of the country, this outstanding Kerotest development has proved itself positively reliable under all conditions of service. It will pay you to investigate its remarkable advantages.

WRITE for special descriptive Bulletin today! It tells the whole story!

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PENNSYLVANIA

SEAG

THE GREATEST NAME

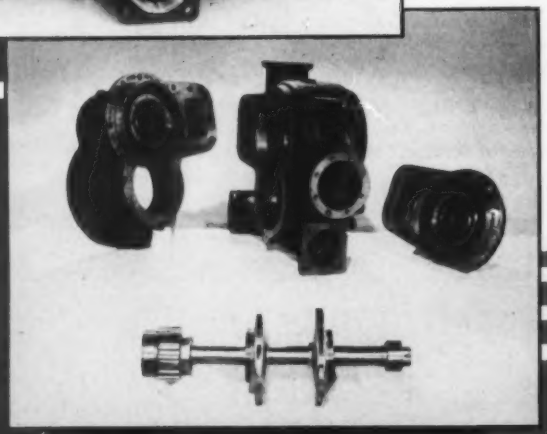
"... Built in the Seagrave Factory" . . . means dependability

The apparatus pictured is a Seagrave 750 Gallon Pumping Engine.

The Body is all steel and is electrically welded.—"It is built in the Seagrave Factory".

The Motor illustrated is a V-12 Cylinder developing 185 H.P.—"It is built in the Seagrave Factory".

The Pump shown is an all-bronze "Parallel Series Type Centrifugal".—"It is built in the Seagrave Factory".



The Seagrave Corporation maintains a large Engineering Department, headed by men who are thoroughly familiar with the needs of the Fire Service and whose sole effort has been in the production of Fire Apparatus.

We make our own patterns. We operate our own Brass Foundry and produce in it castings for Seagrave Centrifugal Fire Pumps and for all other parts in our machines which are made from brass, aluminum or bronze.

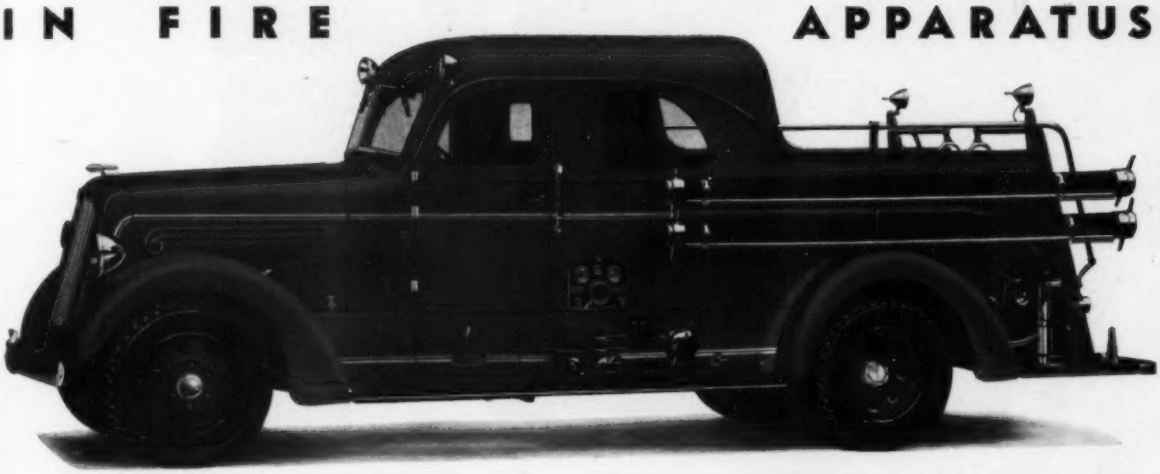
We operate a large Machine Shop in which we have many thousands of dollars invested in machine tools. In this shop we produce the parts for Seagrave Motors, Pumps, Transmissions, Aerial Ladder Hoists and the miscellaneous

THE SEAGRAVE

COLUMBUS

SEAGRAVE

IN FIRE APPARATUS



small parts entering into the construction of our apparatus.

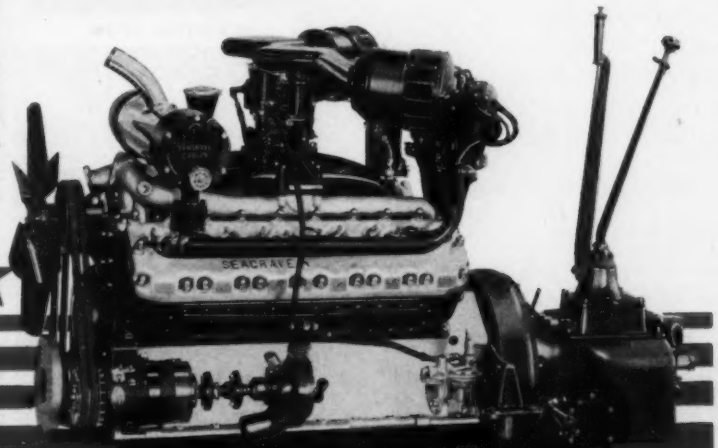
We operate our own Sheet Metal Shop, where we manufacture all parts for bodies, seats, running boards, gas tanks, booster water tanks, fire extinguishers, steel aerial ladders and the many smaller sheet metal parts used in Seagrave Apparatus.

In our Testing Room, all Seagrave engines are thoroughly tested by experienced mechanics on Dynamometers. All Seagrave Fire Pumps are tested for various capacities and pressures while pumping from our Test Room Cistern.

In our Stock Room we carry thousands of dollars worth of repair parts which are instantly available to our hundreds of customers who have Seagrave machines in service, many of which are more than twenty years old.

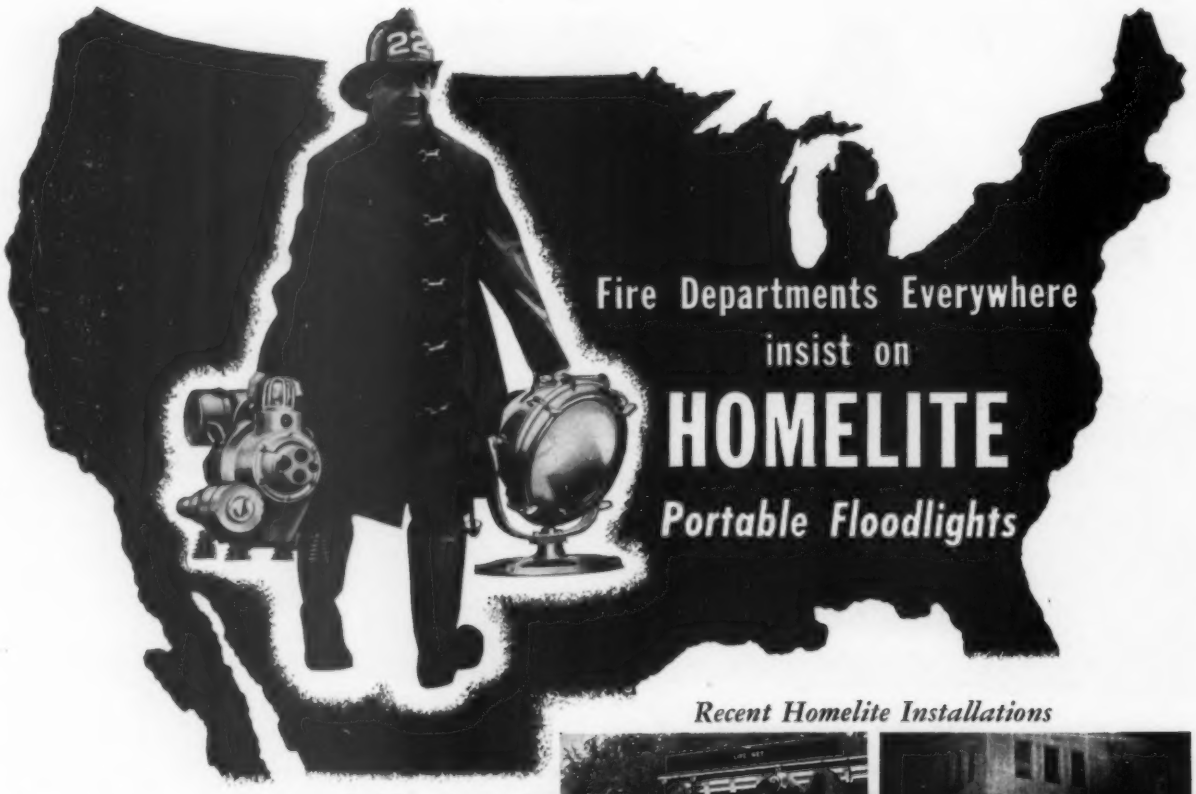
During the entire period of machining, assembling, testing and finishing, the work is constantly under the observation of experienced inspectors who have spent their lives in the Fire Engine business.

Fire Apparatus is not a sideline with Seagrave. It is our specialty and our sole product. We design it and we exercise every control over the material and the workmanship entering into the construction of the parts produced in our factory. In no other way could it be produced so well.



CORPORATION
OHIO

Kindly mention FIRE ENGINEERING *when writing advertisers*



There's only one gauge for the value of floodlighting units—*performance.* And for this reason you'll find more Homelite Floodlighting units in Fire Department use than all other makes combined.

A Homelite Portable Generator weighs only 83 pounds complete with built-in gasoline engine. It's small enough to fit compactly on a truck and light enough for one man to pick up and carry any place you want. Yet it's a power house for wattage—provides 1800 watts with an automatically controlled voltage of 120. It operates several floodlights—without use of long troublesome cables. Gives brilliant flickerless light—the kind your men need for safer and quicker work. And it's built to stand up under long trying service in all kinds of weather.

See The Newest Homelite Units

Visit the Homelite Exhibit at the Convention of the International Association of Fire Chiefs, San Francisco, or write for a private Homelite Demonstration in your home town or city. Absolutely no obligation.

HOMELITE

CORPORATION

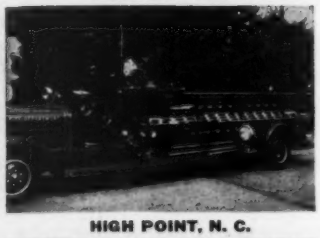
809 Riverdale Avenue, Port Chester, N. Y.

Recent Homelite Installations

VANCOUVER, WASH.

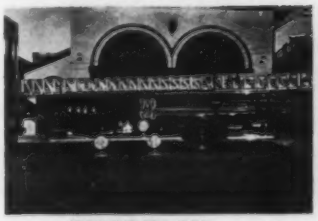
PORTLAND, ORE.

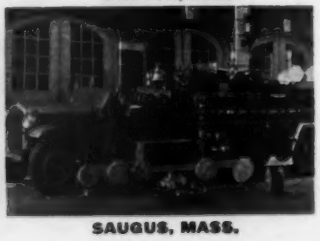
LEWISTON, IDAHO


HIGH POINT, N. C.

PARK RIDGE, N. J.

DAYTON, OHIO


BERKELEY, CAL.


SAUGUS, MASS.

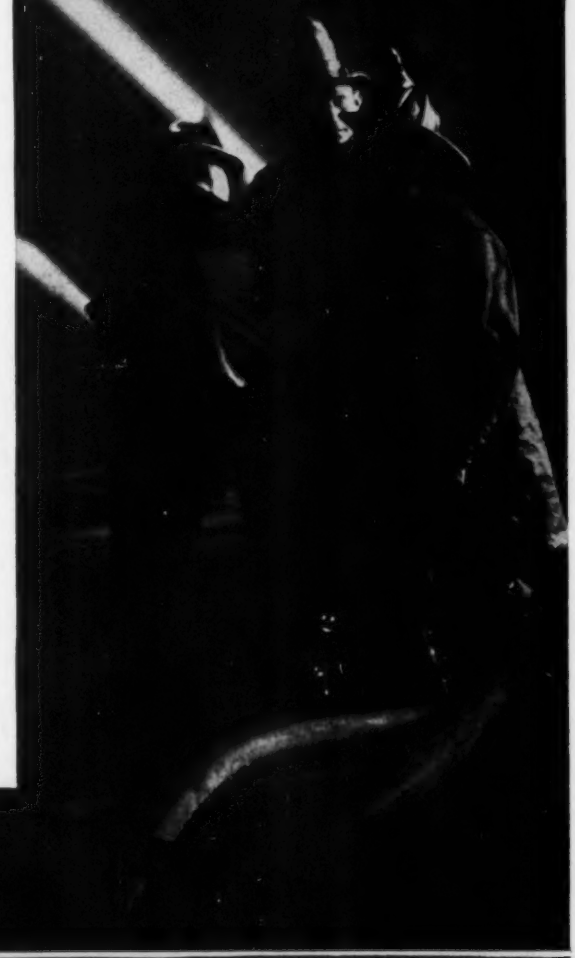
Be Safe! ... and Save with MANHATTAN FIRE HOSE

Safety is first when you buy Manhattan Fire Hose . . . for not one length leaves the factory without showing—in a thorough test under high pressure—the strength and stamina to stand up and deliver water as long as it's needed.

You save, too, when you buy easy-to-handle, flat-folding Manhattan Hose . . . for it is made to withstand rough treatment—dragging, abrasion and external abuse that wears out hose jackets and runs up replacement bills.

Be safe and save. Stay within your budget by specifying Manhattan Fire Hose. There are several grades for either light or heavy duty service.

Sole Manufacturers of Radio-Active Treated Mildew-Proof Fire Hose



THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES and FACTORIES, 52 TOWNSEND ST., PASSAIC, N. J.

Birmingham Boston Chicago Cleveland Detroit Minneapolis
New Orleans New York Philadelphia Pittsburgh San Francisco St. Louis

A Consolidation of
FIRE AND WATER ENGINEERING,
THE FIRE ENGINEER and
FIRE PROTECTION

FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

FRED SHEPPERD
Editor
N. N. WOLPERT, Assistant Editor.

IN THIS ISSUE

Vol. 92 **September, 1939** No. 9

With the Editor 399
Lethal Fumigants—The Human Element Again
By Fred Shepperd

7,240 Pieces of New Apparatus Needed by Fire Service 400

Keeping Apparatus in Condition at San Francisco 403
By C. W. Geiger

The Hand Engine Still Serves 406
By André Roosevelt

A Model Training School for Brookline, Mass. 408

Fire Prevention Week—a Symposium 411

No Conflagration for Custer! 416
By Philip Palmer

Fire Stations of the Coast 419

Liability for Injuries Caused by Fire Department Equipment 424
By Leo T. Parker

Specifications for Uniforms and How to Test Cloth 431

The Round Table Department 436
Continuation of Discussion on Leaks from Underground Gasoline Tanks

Questions and Answers 444

The Fire Problem of the Oil Burner 448
By Chief John I. Brennan

What's Burning 455

The Cover 460
By William Paul Babcock

The Watch Desk 463
By Roi B. Woolley

Among the Fire Fans 464
By Otis Smith

Promotional Study Course 466

Convention Dates 467

False Alarms 468

Manufacturers' Announcements 475

MEMBER
Audit Bureau of Circulations
Associated Business Papers

Published the tenth of each month by
CASE - SHEPPERD - MANN PUBLISHING CORPORATION
Also publishers of "Water Works Engineering" and "Municipal Sanitation"
General Offices—24 West 40th Street, New York

KARL M. MANN, President
I. HERBERT CASE, Vice-Pres. and General Manager

SUBSCRIPTION PRICE
U. S. and Canada, $2 a year;
Foreign, $3; Single Copies, 25c.

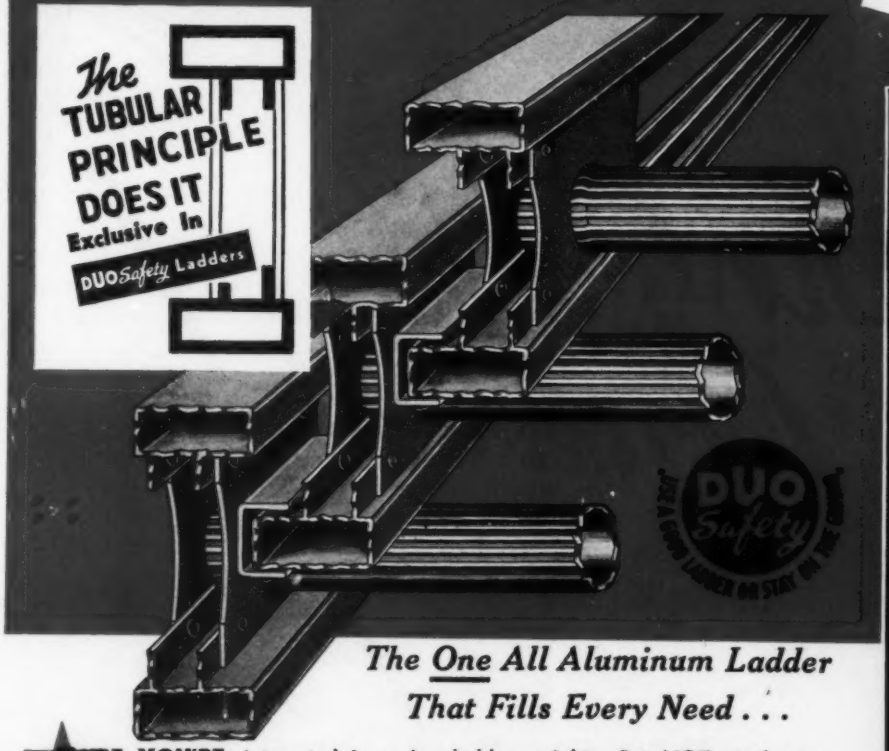
ALFRED J. HOUGHTON, Eastern Representative; H. S. ESSEX, Production Manager.
CHICAGO: 6 N. Michigan Ave.—W. S. CLEVENGER, L. M. ROCHE; SAN FRANCISCO: 444 Market St.—CHARLES H. WOOLLEY, H. N. HARNER
Contents of this issue copyrighted, 1939, by the Case-Shepperd-Mann Publishing Corporation.

Tubular STRENGTH

Lightweight... BUT WITHOUT LOSS OF Strength + Safety!

DUO-SAFETY LADDERS AT SAN FRANCISCO
September 20 to 23
Booths 11 and 12, Civic Auditorium. All DUO-Safety Fire Ladder Lines on display and being demonstrated

The TUBULAR PRINCIPLE DOES IT
Exclusive in DUO Safety Ladders



THREE-SECTION
SERIES 525-A

The One All Aluminum Ladder That Fills Every Need . . .

SURE YOU'RE interested in saving ladder weight. But NOT at the expense of safety! Now you can have aluminum ladders without that sacrifice! DUO-Safety Aluminum Ladders skillfully combine light weight with great strength. Together, the rectangle, channel and "I" beam, as formed by DUO-Safety's extruded duralumin rail and truss, produce a structural strength that makes other forms of fabrication obsolete. LOOK at the pictures. You can SEE DUO-Safety's greater strength. You can SEE that 3-section ladders are at last practical, and how this leads to needed shorter wheelbase trucks. You can SEE an assembly that saves banking space, means more ladders per truck. You can SEE faster ladder action and, with DUO-Safety's Tubular Strength and wider climbing space, you can SEE aluminum ladders being used more safely. Specify DUO-SAFETY ALUMINUM for YOUR installation. **Send for form 75A.**

DUO Safety ALUMINUM LADDERS

DUO-Safety Family of Five . . . America's Number One Five Ladder Line

★ Aerial ★ All Wood ★ All Aluminum
★ Space-Saver ★ Compo Wood-Aluminum

Sold by Leading Suppliers and Special Representatives Everywhere

MADE BY DUO-SAFETY LADDER CORP.—CHATHAM, VA. U. S. A.

Sweeping the Country!

POWERFUL SIREN ROAR
WITH A *Swinging*
BEAM OF RED LIGHT

TRAFFIK-KING

The Combination Oscillating Light and Siren

ASK FOR BULLETIN NO. 64

FEDERAL ELECTRIC COMPANY INC.

8702 S. STATE ST., CHICAGO, ILL.

FIRE ENGINEERING

The Journal of the Fire Protection Profession

Volume 92 SEPTEMBER, 1939 No. 9

With the Editor

Lethal Fumigants Calcium cyanide, under the trade name of "Cyanogas," is widely used for the destruction of vermin in buildings. In many cities it may be purchased at almost any grocery or hardware store, being merchandised in tin containers of four and six-ounce size. Quantities on hand may run into gross lots.

Because the material is a powerful poison, its presence is of more than a little concern to the Fire Department. Gas thrown off by the chemical is also highly inflammable.

The manufacturers state that "Cyanogas," which is in powder form, contains approximately twenty-five per cent available hydrocyanic acid (the deadly ingredient), which is liberated upon exposure to the air when the material is spread out over a wide area. They further state that the gas is destroyed by fire, and that it is rapidly absorbed by water. On these premises the product is held to represent no hazard to the firemen in the event of a fire involving it.

When it is recalled that but a few breaths of the gas can cause unconsciousness, followed by death, it will be appreciated that no chances should be taken, despite all these assurances.

Thorough ventilation of the building, liberal use of water, preferably in the form of spray, and even the employment of suitable gas masks are recommended.

A dangerous product may be safe under specific procedure, but fires are not always going to follow predetermined rules.

The Human Element Again The building code of the City of Detroit requires that basement doors of large buildings be kept closed. But in one instance recently they were not, and a $15,000 fire resulted.

Detroit weather was warm, and the employees of the Crestwood Apartments opened the basement doors wide and fastened them open to cool the building. Fire started in a basement storage room, and fanned by the breeze from the open doors, spread quickly through the entire basement. Only effective work by the Fire Department confined the fire to this point.

Fire prevention rules may be perfect, but old man "human element" must be reckoned with. With particular force does the old adage "Eternal vigilance is the price of success" apply to fire prevention.

Fred Sheppard

MAIN LIBRARY

A Line-Up of the Old Timers

Line-up of apparatus at Dayton, Ohio, photographed a year ago. The first three engines, from the left, were then twenty-two years old; the next five were twenty-one-years old.

7,240 Pieces of New Apparatus Needed by Fire Service

Nearly Half of Units Now in Service are Obsolete, Though Some Serviceable

TODAY, replacement of 7,240 pieces of apparatus is sorely needed by American fire departments. They have gone beyond the period of obsolescence; they have reached the point where they fail to function. They are constant repair shop customers, entirely unworthy of fire duty; and yet they still must be used.

A survey made three years ago by FIRE ENGINEERING showed that at that time approximately forty per cent of fire apparatus in use was obsolete. Since then approximately 2,700 pieces of apparatus have been purchased and installed while 3,000 additional pieces have reached the point where they should be discarded.

On the basis of twenty-five years as the very maximum life of the best of machines, 1,600 fire engines and ladder trucks need replacement each year. This rate will be greatly accelerated during the next few years when the great number of machines bought in the early twenties reach the end of their usefulness.

Twenty Years Should Be the Limit

While twenty-five years has been noted above as being the very ultimate in life of a fire engine, this would apply only where the best of apparatus is employed and light service given it. If it does heavy duty, twenty years would be the maximum life. Under extra heavy service, such as in New York and other large cities, fifteen years would be plenty.

Make no mistake about it! An extremely critical situation now faces many American cities where the fire departments, due to ancient apparatus, are no longer equipped to cope with a great fire.

The seriousness of the condition can be appreciated when it is pointed out that forty-three per cent of all factories destroyed by fire are never rebuilt, and that for each workman thrown out of work by a fire, four persons, on the average (including the workman) must turn to relief or elsewhere for support.

Cities have failed to keep their fire departments up to mechanical strength because of seemingly greater demands for available revenue for other pressing purposes. Furthermore, municipal officials are prone to the fallacy that because serious fires have not occurred in recent years, they cannot occur in the future.

Fire departments throughout the country report growing difficulties in keeping apparatus in operation condition. Such reports indicate but one thing: the generally depreciated condition of fire apparatus, due to failure to replace wornout units during the past few years.

To aggravate this situation, the development in commercial vehicles and private cars has continued during that period, until today fire apparatus on the highway is at a tremendous disadvantage both as to the speed and braking ability.

Just Imagine What These Firemen Are Saying

Rather embarrassing to have an engine stall on the way to a fire. But that is a common occurrence with a twenty-five-year-old machine.

Even the lightest pleasure cars today have four wheel brakes. Yet, but forty per cent of the fire trucks rolling on the streets are similarly equipped.

From the standpoint of tires, too, fire trucks are very much behind times, as nearly twenty per cent of the fire trucks in service today have solid tires.

Need for New Apparatus

It is reasonable to assume that industry will pick up during the next few years. If so, fire departments, which were able to maintain satisfactory protection during the depression, will soon find themselves incapable of continuing their good fire record.

Depleted personnel in departments will be aggravated by apparatus of very uncertain dependability. There is, therefore, a rapidly growing need for better fire protection. Apparatus that served during the business lull, covering the past seven years, will find itself called upon to perform much more difficult tasks in the future, and with several years more age upon it.

If cities are to continue to enjoy low fire loss records, accomplished by fire departments during the past six or seven years, it will be absolutely necessary to make replacements of obsolete machines. There can be no delay.

The condition is general in both large and small cities.

For example, the Philadelphia Fire Department has been operating for years with antiquated department equipment.

Fine for Girth Control, but Officially not Sanctioned

One way to start a fire truck, but not recommended, when time is at a premium. This is a twenty-five-year-old machine at Philadelphia.

One of the local papers, the *Philadelphia Inquirer*, described the conditions as follows:

"The disgracefully run-down condition of the city Fire Bureau, as revealed by Chief Davis, is something that directly concerns every citizen of Philadelphia.

"Other features of governmental operation may be neglected or abused, other municipal services may be unsatisfactory, other city agencies may be over-run with inefficiency, and the average person may remain undisturbed. But if safeguards against fire are inadequate, if the city's fire-fighting forces are allowed to deteriorate, the situation is one that cannot be tolerated or justified, because it spells danger.

"The firemen do not have the proper material to work with; the apparatus provided is outdated and outworn; the high pressure lines fall far short of needs; the Bureau is undermanned.

"Such a condition cannot go on for long without inviting disaster. It has already menaced the city for too long a period. It should be rectified without delay.

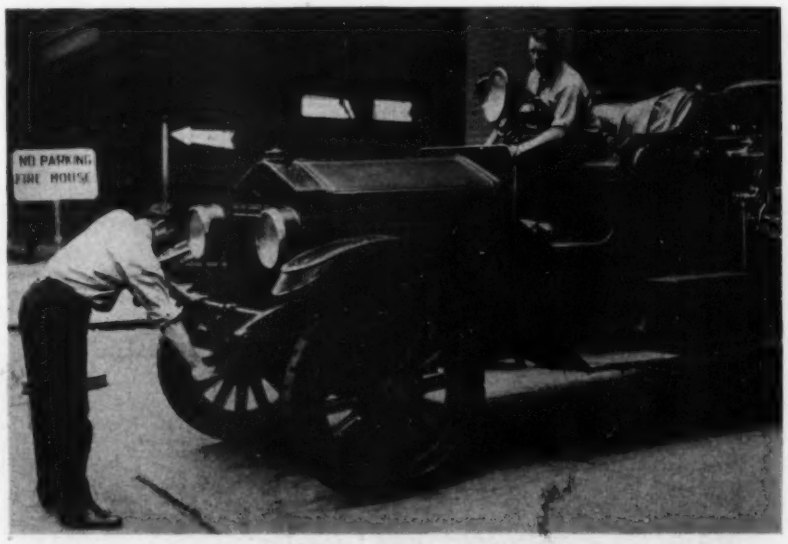
"The old excuse of lack of money cannot stand in the way of a rehabilitated fire-fighting system. It may not be possible to obtain off-hand the whole sum considered necessary by Chief Davis to bring the Bureau up to date, but there is no reason why a start should not be made on the rehabilitation program.

Department Avoids Issue

"The Bureau heads knew years back that apparatus would last only so long, that new devices would be required as fire-fighting technique developed, that trucks and wagons would wear out, that new stations and additional personnel would be required.

"With its customary short-sightedness, however, Council refused over the years to look ahead to future needs of the Fire Bureau. In thirteen years, the Bureau has virtually stagnated so far as new equipment is concerned.

"Three years ago the inadequacy of Bureau equipment was disclosed in a report issued by the Controller as a result of an inventory. The report showed that seventy-six fire trucks



Age Is Not Appreciated in Fire Apparatus

This old Boyd engine at Philadelphia has nearly reached its twenty-fifth birthday. Of course, it's hand cranked.

were in such poor condition that they should not be used and that in the whole Bureau only twenty-four trucks could be pronounced in good shape.

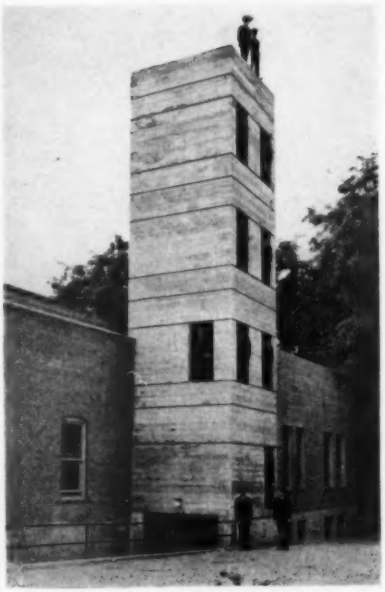
"It is to Chief Davis' credit that he marks his confirmation as the actual head of the Bureau with a realistic report on the physical condition of the Bureau and the itemized list of needs."

In Philadelphia, as in other cities, it would require a fire of conflaflgration proportions to show the real weakness of the department. The ancient apparatus would not stand up under conflagration demands; but it would then be too late to recognize the condition.

Cleveland, Ohio, is another typical city. Much of the fire apparatus is old, fifteen pumpers having been in service nineteen years, three in service twenty-one years, and one in service twenty-five years. Three pumpers, one hose wagon, two ladder trucks and a gasoline tank truck have recently been delivered and three rescue trucks are on order; prior to this, no pumpers have been purchased since 1931 and only two ladder trucks since that time. There is no reserve equipment; in some instances apparatus has been out of service for repairs for periods of nearly a year, and companies are out of service while their apparatus is in the shop.

Since 1931 both fireboat companies and the water tower company have been discontinued. No new engine and ladder companies have been established.

The safe rule to follow in any city would be to replace promptly all apparatus over twenty years of age and give critical inspection to all machines over fifteen years of age.



Lewiston Drill Tower

REORGANIZATION OF DEPARTMENT CUTS LOSSES AT LEWISTON

Insurance Penalties Removed When Fire Losses are Halved

Chief Thomas Cuff

ABOUT eighteen months ago, the city of Lewiston, Idaho, was having difficulties. Their losses were excessive, and the Idaho Surveying and Rating Bureau had penalized them to the extent of a twenty per cent increase in insurance rates. The city officials were extremely anxious to have this removed, and made an appeal to the National Board of Fire Underwriters for cooperation, and Jay W. Stevens was accordingly sent there to advise with them. The Mayor, Fire Commissioner and two of the leading insurance men were on a committee to analyze the situation and if possible, correct it.

It was Chief Stevens' opinion that the thing most necessary was a Chief from the outside. The men had never had any schooling, the Chief was willing, but without modern fire fighting knowledge. Chief Stevens recommended several men, in whom he had confidence, and they finally selected Chief Thomas Cuff of Menlo Park, Cal., who applied for and received a year's leave of absence for the purpose of carrying on the reorganization work. It was necessary that they increase Chief Cuff's salary from $165 to $300 to induce him to leave Menlo Park.

During the past fifteen months Chief Cuff has been doing a fine job. He first built a temporary frame tower for drilling the men, instituted a school of instruction, carried on intensive inspection and fire prevention educational work, and did a good job of public relations work. The Headquarters Station has been entirely remodeled, including the construction of a concrete drill tower, as per photograph.

A new station, Engine Company No. 2, was built, men were added to the department, and the members given a moderate increase in salary to encourage them.

At the recent conference and school, Chief Cuff and his boys put on an exhibition night drill before 50,000 people, among whom were the city officials and several leading citizens of Lewiston, Idaho. The firemen acquitted themselves very satisfactorily.

Chief Cuff returns to his own department in September, although there is a demand on all sides for him to remain permanently. During the fifteen months he has given the two Assistant Chiefs an intensive schooling, and both he and Chief Stevens are confident that either

(*Continued on page* 459)

Fire Department in Front of Lewiston Fire Headquarters

Keeping Apparatus in Condition at San Francisco

Modern Repair Shop Well Equipped for Maintenance Work

By C. W. GEIGER

THE Commissary and Repair Shops of the San Francisco Fire Department are housed in a $100,000 reinforced concrete structure and are equipped with the latest machinery for repairing all types of fire fighting apparatus. The repair shop is under the supervision of the Superintendent of Engines, who is responsible to the Board of Fire Commissioners and the Chief Engineer for the conduct and management of the repair shop.

He is charged with the control and direction of the men assigned to duty under him and keeps a detailed record of all the work done, of any and all apparatus which become injured, broken or in any way disabled, together with date of such occurence, the company or place to which it belongs, the nature of the injury or disability, the cause, if known, and such other information regarding the same as may be necessary. It is his duty to visit the quarters of each company once a month, or as occasion may require and inspect the apparatus in service in the department and report at least once each month the condition of the same to the Chief Engineer and make such recommendations as he may deem necessary.

Control of Supplies

The Clerk of the Commissary has charge and management of the Supply Department and has charge of all hose and apparatus and supplies purchased by order of the Fire Commission. Upon receipt of the proper requisition he delivers to the various companies the monthly supplies and stores for each company. He keeps the books and accounts of the supply department, in a manner that shows the supplies received by him, the amount delivered to each company, and the amount remaining on hand. He also keeps in a specially provided book an account of the quantity, kind and condition of the hose in the department and in each separate company, with such other record as may be required to insure at all times full knowledge of the condition of the same. He delivers supplies only upon an order signed by the Chief Engineer and the Secretary of the Commissioners (except during a conflagration, when supplies or apparatus may be delivered on the order of Chief Engineer, Assistant Chief Engineer, Batallion Chiefs or Captains) and procures a written receipt for all such appliances delivered.

Shop Layout

The first floor of the plant is occupied by the erecting shop, machine shop, wood working shop, blacksmith shop, and the paint shop. Above the paint shop is the store room and main office of the plant.

The roof is of concrete and of the saw tooth type. The glass in the roof is wired. The roof is supported by steel girders.

Practically the entire plant is piped with water, gas, and compressed air, and is wired for electricity, with services at every work bench and pit, etc. Because of this it is not necessary to take a job to a service, but the repairs can be made on the apparatus wherever it may happen to be. The erecting shop is equipped with pits and there are two portable frames about fourteen feet high built something like a horse. Each of these frames can be placed over any apparatus to be repaired, one frame at each end and by means of the hoist, the body of the apparatus can be raised readily. Under the erecting shop, there is a large subterranean gasoline tank for supplying engines, being repaired, with fuel. Leading from the erecting shop, through a large opening, is the machine shop equipped with the necessary machinery to do all kinds of repairing to the apparatus and autos. Here, in addition to small pits, is a large pit with stairway leading to same, which will allow inspection of apparatus without getting the clothing soiled. This is very handly should officials desire to make inspection of some piece of apparatus. Here is a vacuum machine for calibrating gauges, dials, etc. All gauges that are used in the fire department are calibrated regularly, and also before all tests, whether they need it or not. Here is also a well equipped tool room, and an acetylene welding torch, which is used in welding gasoline tanks and for other repairs.

Both the machine shop and the wood working shop are housed in one long room. In addition to the light from the saw tooth roof, one entire side of the building is also equipped with windows. The wood working shop does all wood work for the department and is especially equipped for both repairing and building new ladders. A long bench is provided especially for this kind of work, there being a boring machine in connection with the bench for boring holes for rungs.

Machine and Wood Working Shop

All machinery in the wood working shop is equipped with the latest safeguards to guard the workmen from injury. Rubber mats are placed in front of the machines for the workmen to stand on to prevent them from slipping and falling into the machinery. All machines in both the machine shop and wood working shop are operated by electric motors. Pipes connect to all the wood working machinery and all dirt and shavings are drawn away by an electrically operated fan and deposited in a bin on the outside of the building, and later dumped into wagons and hauled away.

Blacksmith Shop

The blacksmith shop occupies considerable space, and is equipped with a drop hammer operated by compressed air. Practically all axles are made here. The material is bought in large bars and worked out by the hammer. There are five forges all operated by electrically operated fans. The blacksmith shop is equipped with drill presses and tire setting machinery, all operated by electric motors.

The paint shop is unusually well

equipped, having a special room and drying system for drying newly painted apparatus quickly. The paint shop, erecting shop and blacksmith shop have entrances leading directly to the street and are equipped with corrugated iron doors that roll up, each rolling door having a small door for use when the rolling door is closed.

The second floor immediately over the paint floor is occupied by the main office and the commissary, draughting room and the harness repair shop. The department maintains a draughtsman for making drawings for specifications.

Harness Repair

The harness repair shop is well equipped and makes repairs to old units and makes new parts as follows: Makes cushions, does trimming on tops, and trims lazy backs for all machines in the fire department; makes leather nozzle covers, and all strap work for holding hose, ladders and tools on apparatus. As the department is entirely motorized, straps are now being made from the harness, tarpaulins for wagons, feed bags, bags for carrying fittings. Rubber gaskets for the high pressure system are cut here. Here are made splices for all the ropes carried on the apparatus. Life belts for Pompier ladders, hose and handle straps for carrying hose up ladders, belts and 100-foot hose straps for carrying 1½-inch hose to a fire are also made.

A concrete oil house is located just outside the store room where oil for the different fire companies is stored. There are metal tanks for the various kinds of oil. A hoist is provided for raising a barrel of oil onto a steel runway which extends above all the tanks. After a barrel has been hoisted to the runway it is moved over the tank that is to be filled and the oil is delivered by gravity.

Repairing and Testing Hose

All new hose is kept in hose racks fifty feet in length. One man devotes his entire time to repairing hose. It often happens that the outer jacket of some hose is cut or burned, while the inner, or inside rubber lining is good. Again the rubber lining becomes rotten or unfit for service. In such cases the outer jackets of both are removed and a new jacket placed over the good rubber lining.

San Francisco is strict in regard to testing hose, and has complete devices for testing hose. San Francisco also has the highest main pressure of any city in the United States, the pressure being as high as 329 pounds when the high pressure is turned on. San Francisco requires all new hose to stand a test of 400 pounds with safety. New hose is required to stand a pressure of 1,300 pounds before bursting.

All hose is tested quarterly, with engine or high pressure system. Each month, each company runs water through all hose from hydrant pressure for the purpose of locating any leaks that may develop. In case leaks develop, a report is made to the Chief Engineer of the department, who orders the hose sent to the storeroom to be repaired.

Each quarter, the Captain of each company makes a report to the Chief Engineer showing the amount of hose in his company, with the size, condition and age. This is checked up with a card system which has a full record of all hose from the time of purchase to the time it is condemned. The card system tells when each piece of hose was placed in service, if damaged and when damaged, recoupled, relined, transferred, rejacketed and condemned. When a piece of hose is condemned, it is sold at public auction, there being a big demand for the hose to be used for irrigation purposes.

Tests Applied to Hose

All hose purchased by the San Francisco Fire Department is given three tests, and if it stands all three tests, it is accepted.

The hydraulic test requires the hose to be subjected to a pressure of 400 pounds. While under this test the hose must not leak, or sweat or break the threads of the cover, it must not contract in length or diameter and shall not increase its external diameter more than 1/16 inch at any point. This test is made by the fire department at the shops, and to the satisfaction of the Board of Fire Commission, or the authorized representative, Chief Engineer and the Superintendent of Engines.

The hydraulic tests are made on specially constructed testing apparatus located at the shop. The testing device has five outlets and, by means of reducers, hose from one to four and one-half inches in diameter is tested. Extending from the outlets are constructed tables 50 feet in length on which the hose to be tested is laid. The testing device or manifold is connected to a triplex, three-stroke hydraulic pump, operated by an electric motor. A gauge is also provided to show the pressure. A bypass is arranged to bypass the water if desired.

In the adhesive test, a piece of hose 1½ inches wide is taken and the rubber pulled away from the cotton, where the two are cemented together, for an inch, so that a clamp may be fastened to the free end of the rubber. Another clamp is attached to the free end of the cotton. One of the clamps is held and a ten-pound weight placed on the other clamp. A mark is made on the cotton where the cotton and rubber are held together by the cement. One of the clamps is held so that the ten-pound weight pulls down on the rubber, tending to pull the rubber away from the cotton where the two are cemented together. This must be held in this manner and the weight

Fire Rides the Airways Over Chinese Towns

Fire is being employed as a destructive weapon by the Japanese in raids over towns in China. This picture shows one of the results of the recent bombing of Chunking, the wartime capital of China, where 5,000 persons were killed. On the faces of these victims are registered shock, terror, and grief, as they watch their homes being destroyed by incendiary bombs.

must not pull the rubber away from the cotton faster than one inch per minute. If it does, the hose is rejected.

The tensile test is carried out on a specially constructed machine in the store room. It consists of an upright frame with a stop dial scale supported at the top. Along the side of the frame there is a tape line. A drum, operated by a hand lever, is placed in the lower part of the frame about a foot from the floor. A small steel cable is fastened to the drum and is adapted to be wound about same. For the tensile test, the sample of rubber is obtained in the following manner. A piece of the rubber lining six inches long by one and one-quarter inches wide is cut out of the length of hose as selected at random from each lot.

These samples as cut are reduced in the center for a parallel distance of two inches long by half-inch wide, the reduction to be made by long radial fillets to protect the sample from tearing above the parallel section. In making the breaking test, two lines are placed on the test samples two inches apart and at right angles to the pull. A clamp is attached to the scale in the top of the frame. The other clamp is fastened to the cable that is wound around the drum in the lower part of the frame. The drum is then wound up which stretches the sample. This is continued until the sample breaks.

The length of the sample that was marked with the line two inches apart must stretch five and three-quarter inches before breaking. The length to which the sample is stretched is measured by the tape line on the side of the frame. The scale at the top works similar to a stop watch. It registers the pull on the sample at the instant of breaking. In the next test, a similar sample is taken and stretched until the two-inch piece is stretched to ten inches. The rate of expansion must be uniform, not to exceed six inches per minute. The sample is held in the expanded position for ten minutes and released. After release the two lines that were two inches apart before the test must not exceed 2.4 after being released.

Robert H. Lockwood Passes Away

It is with deep regret we announce the death of Robert Havell Lockwood, Associate Editor of FIRE ENGINEERING, who succumbed to an abdominal operation at St. Agnes Hospital, White Plains, N. Y., on August 9.

The Late Robert H. Lockwood

For twenty-two years, Mr. Lockwood was identified with this journal, first as Editor of FIRE and WATER ENGINEERING, then as Editor of FIRE ENGINEERING, its successor, and finally as Associate Editor of the latter publication.

He was born in 1868 at Ossining, N. Y., a son of the late General Munson I. Lockwood, one time head of a military academy in White Plains, and of the late Amelia J. Havell Lockwood. His grandfather, the late Robert Havell, was engraver of bird illustrations for Audubon.

Mr. Lockwood was early identified with the Lockwood Press, a publishing house operated by his brother. Later he was with Munsey interests, which published newspapers and national magazines.

Leaving Munsey, he joined the staff of FIRE and WATER ENGINEERING as Editor, and held this post until 1926, when this journal was separated into two publications, WATER WORKS ENGINEERING and FIRE ENGINEERING. Thereupon he became Editor of both journals, holding that position on FIRE ENGINEERING until January, 1932, when he was made Associate Editor, and continuing as Editor of WATER WORKS ENGINEERING until October, 1934, when he became Associate Editor. He continued in this position up to August 4, when he left for vacation and to undergo what he believed to be a minor operation.

The operation was performed on August 8, but he failed to rally from it, and passed away in the morning of the 9th.

A true gentleman, kindly in spirit and unswervingly loyal to those he served, Mr. Lockwood made a host of friends among associates and others with whom he came into contact. His passing leaves a gap that will be hard to fill.

He was a life member of the Veterans of the Seventh Regiment, N. G. of N. Y., and of the New York Typographical Union.

Surviving are his widow, Mrs. Kate Lockwood, and a daughter, Mrs. Jessie L. Wilson of Norwalk, Conn.

New Service Truck for Lubec, Me.

Replacing obsolete fire apparatus built thirteen years ago, Lubec, Maine, put into service in July, 1939, a new 500-gallon rotary type pumping outfit. In addition to the usual equipment of the triple combination type truck, this new job carries a twenty-horse power portable pump of 125 gpm capacity, installed in a separate compartment back of the drivers cab, on a rail rack that allows for immediate removal for forestry work, or as an auxiliary pumping unit for town use.

The truck is of the closed cab type for the protection of the driver, and carries the complete complement of ladders located side by side on the top of the truck, and 150-gallon booster tank. The body is divided for 1,200 feet of 2½-inch hose, and 500 feet of 1½-inch hose. It carries four lengths of 4½-inch suction and two lengths of 2½-inch suction hose. This piece of equipment is a needed addition to the fighting equipment of the town of Lubec. John H. Trecartin is Fire Chief.

J. W. RANDLETTE.

Exhibit Furniture for I. A. F. C. Conference

The Exhibit Committee of the International Association of Fire Chiefs, of which Chief Ray Tiller of Waterloo, Iowa, is Chairman, has arranged with the Abbey Chair Rental Company of San Francisco for booth setups and furniture for the annual conference of the International Association of Fire Chiefs, to be held at the Civic Auditorium in that city on September 20 to 23.

The booth enclosures will consist of blue velour cloth mounted on chrome plated frames. The backs are 7 feet high, side rails 33 inches high, and each exhibitor will be provided with a sign up to forty letters in two lines, letters four inches high.

Hurley, Acting Chief of Northampton, Mass.

Thomas W. Hurley has been named Acting Chief of the Northampton, Mass., Fire Department. He succeeds Chief John L. Lucier, who retired August 6. A civil service examination will probably be held soon to establish an eligible list.

The Hand Engine Still Serves

By ANDRÉ ROOSEVELT

DOCTOR BORIS, our most prominent veterinarian, had taken care of our beloved German police dog and had pulled him through a very nasty case of distemper. We consequently had a very warm spot in our hearts for the smallish, dapper, and bearded little man. The Doctor, though living and practicing in Ecuador, was a Russian. He had studied at the well known school at Alfort, France, and was exceptionally good at his profession. His English was an abomination, but he spoke excellent French, in which language we conversed with fair success.

Variety of Cases

He had looked over "Cayambe," the pup, and pronounced him definitely out of danger, so we decided to celebrate to the tune of a drink or two. After a toast to the dog's future welfare and another to our own, I asked how his menagerie was getting along. He explained:

"Ah, *mon cher,* all is well. My black monkey from the Orient has about recovered from his bronchopneumonia—a bad case if there ever was one. I spent a good many anxious moments with the poor beast; my big python is beginning to take a little food; the German Minister's two honey bears are going to be sent home tomorrow completely cured, and finally the cattle on the Machacha sector are getting over the epidemic of 'hoof and mouth' disease. So now I can relax a little. I've had a pretty hectic month.

I grinned sympathetically, "You do seem to get a lot of freak cases."

"Mais oui," he answered, and smiled his slow gentle smile. "Did I ever tell you of my most extraordinary cure? It was when I was called in to save a very sick elephant."

Now An Elephant

"No," I exclaimed. "What happened? The prelude sounds interesting."

"Well, *mon cher ami,* it happened right here in Quito. Once in a blue moon a traveling circuit hits this town and needless to say simply coins money. It was five years ago in April, when one of these blew into town from Guayaquil, our harbor. It was a fairish outfit and carried as animal exhibits a rather mangy old lion, a fairly decent tiger, a few smaller cats, a couple of ostriches, and finally, a full grown female elephant which always was the *clou*—you know, the hit of the show.

"It seems that this ponderous old lady had been with them for years and years and had never been sick a day in its long life. The sudden change from tropical food to the grass, hay, and alfalfa of our highlands, had completely upset the animal's system. When I was called in to examine 'Bimba' she was a very sick animal indeed. You know how it is. People generally call in the *medico* when it's too late or nearly so. This proved to be just such a case. After a talk with the elephant's keeper and a thorough examination of the animal, I diagnosed the illness as being simply a very bad and serious case of constipation due to the sudden change of food. It seems that 'Bimba' had been given a half gallon of castor oil the day before without bringing about the slightest relief, so something drastic had to be done. I suggested to the proprietor and keeper that an enema would perhaps save the suffering beast. Both agreed to this. But, *pour l'amour de Dieu,* how was I going to administer the dose and how much liquid should it be? You see, *mon ami,* I had never had such a patient, such a monumental one. I had no data to go by. My responsibility was very very great. *Eh bien,* I took out my note book and did some figuring. If a cow weighing about so much could take so many quarts, then an elephant weighing four tons would or should take about fifteen gallons. That was fairly easy! But how, *penzes vous, mon cher,* could I handle this enormous quantity of water and chemicals?

"I must say that for a while I was completely stumped. Then a great light broke—I had THE inspiration. We have *pompiers,* you know, firemen, in Quito, so to Headquarters I went in my flivver. I found my friend Chief Alphonso and asked him, 'Have you—', then stopped, for there in a corner stood the object of my desire. It was an old hand fire engine which was in good condition. On it was inscribed 'Company No. I, Sayville, L. I.,' and the date 1876! I made arrangements to have the outfit wheeled to the circus grounds, looked for and found the nozzle which belonged to this antiquated piece of ma-

Reprinted from "Globe," the monthly journal of travel, through courtesy of the publishers.

chinery as well as a short piece of hose, and returned to my patient. In due time the engine arrived. With the help of four men I gave it a test; found everything in order, heated the water, mixed the chemicals, and with the four men at the handle bars of the machine—performed the operation.

Usual Method Did Not Work

"Ah, Monsieur, it was terrible! Nothing happened! The elephant was now lying down and the case seemed hopeless. I was going to lose my elephant, my patient. I am a gentle soul as you know, and I nearly wept. Then I thought of my reputation and decided to use *les grands moyens,* the violent methods. One has to do that in extremely dangerous instances. I had my men prepare another fifteen gallons and when ready they followed the first mentioned ones. And then I waited. Beads of 'transpiration' were on my brow. Silence reigned in the stable and then, *Dieu soit loué,* the poor animal got relief.

"I took care of my patient for a few days more, prescribing a few pounds of this and a few pounds of that so that in one week 'Bimba' was up and around and squealing for food—she did not get until completely cured."

I laughed until the tears ran down in streams, for I have a vivid imagination and I could picture the scene in my mind. The worried little Doctor, the monstrous patient, the fire engine, the thirty gallons of cure. I said, "My hearty congratulations, Doctor. I hope that the fee was in direct ratio with the size of the old girl."

"Ah, Monsieur," replied the *medico,* "it was not. *Voyez vous,* when it came to presenting my bill I was stumped again. When in a quandary I always take out my little book and do a little figuring. If I had treated a cow that weighed so much, I would have charged so much, hence, for an elephant which weighed so much more, I should charge so much more but, since elephants are so much scarcer and more precious than cattle, I decided to multiply the sum by the factor of ten, which I thought fair enough. The bill called for 2,000 sucres, or about $200 of your money. I presented the bill and the proprietor squealed even louder than the elephant had when I operated on her. He went to law about it and I had to compromise for 500 sucres, or fifty dollars." But again the Doctor smiled his quiet smile. "But I got the dirty miser, ah, *mais oui,* I got him!"

"What did you do?" I asked.

"I went to see Alphonso, the fire chief, and my friend, and said, 'Listen, Alphonso, supposing I could show you how you can get fifty good dollars for your company, would you do as I say?' Of course, he agreed. 'Then, my boy, make a bill to those lousy cheap circus people as follows: To rental of one fire engine, complete with four firemen, for its use under extraordinary circumstances and for its transportation to the circus grounds and return to engine house—$100.00.'

"When Alphonso had written out the bill, I said, 'Now, you get into your official red Packard, take with you at least six of your strongest boys in their red uniforms and shiny helmets, present the bill, and—come back with the money.'

"Alphonso yipped with delight, turned in a fire alarm, and in two minutes off he went to the circus, siren screeching. In another five he was back with the money."

"But," I asked the Doctor, "you had Alphonso prepare a bill for one hundred bucks. What happened with the other fifty?"

"Ah, oui," answered the Russian veterinarian, "I got that!"

New Low Loss for Schenectady

In his annual report, Chief James J. Higgins of Schenectady, N. Y., points out that the fire loss for the past year is $135,906, with a per capita loss of $1.42, the lowest loss since 1921.

The training school for all officers and firemen was officially opened July 9, and attendance is compulsory. It has proven to be the most beneficial factor in increasing the efficiency of the department.

An all-year fire prevention campaign was carried on by talks in schools, service clubs, boys' clubs, boy and girl scouts, fraternal organizations, radio, motion pictures, press notices, and forty-four fire prevention plays that were given in schools. The department distributed 65,000 stickers, 1,300 posters, 1,000 fire prevention puzzles, 300 fire prevention coloring books for small children, and 48,900 pamphlets containing fire prevention data.

A Model Training School for Brookline, Mass.

THE City of Brookline, Mass., has just completed a combined fire station and drill school, which is, without question, the best equipped fire department school in the country. It was designed by Chief Selden R. Allen.

The fire station is built to accommodate twenty-two privates and four officers, and the equipment thereof will be the finest procurable. Provisions have been made in this building, which, by the way, is absolutely fireproof, for the fire college, and it is designed to provide for eighty men at a time. It is also intended to utilize the building for the Massachusetts Drillmasters Headquarters.

The site for the project was selected on account of its isolation, so that the throwing of water and other evolutions could in no manner be objectionable to any neighbor. The layout also provides for the throwing of water an unlimited distance both horizontally and vertically.

Three acres out of a ten-acre wooded lot, owned by the city, were assigned to the Fire Department as a site for the station and drill school. As the seven remaining acres will remain in the possession of Brookline, there can be no encroachment by anyone upon the location.

Platform for Drilling in the Use of Cellar Pipes

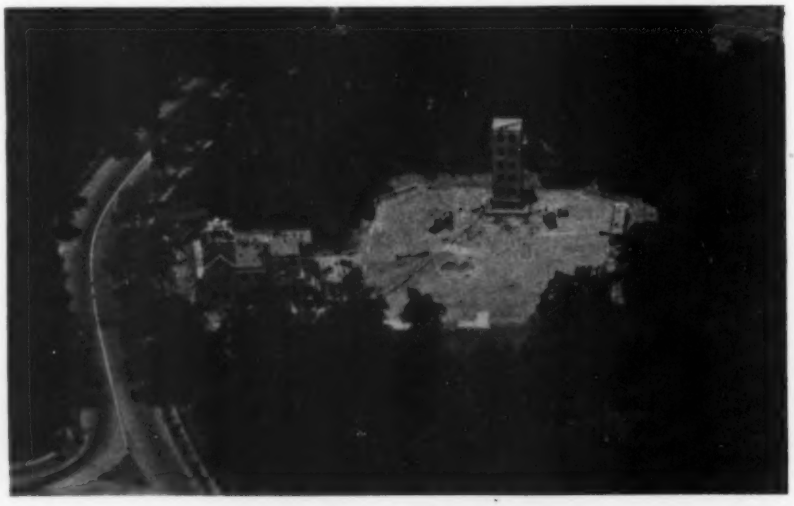
The drill yard is triangular in shape, surrounded by curbstones, and measures in the clear 210 feet by 178 feet, entirely encircled by a chain link fence. The buildings skirt the drill yard, with the exception of the drill tower, which is set in the yard to enable trucks to drive completely around the building, and a demonstration platform for all types of cellar pipes. All other structures border the drill yard area.

Water for Pumpers

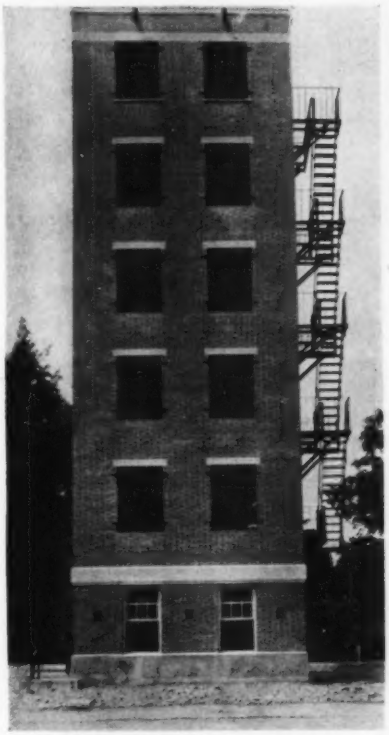
A 30,000-gallon submerged concrete tank is provided for draughting and testing engines. The water from this tank may be thrown by firestreams into a 35,000-gallon submerged concrete tank with a pent house roof over it, and the water returns to the first tank by way of a ten-inch main, thus enabling the department to use the water over and over again. A large main is laid into the drill yard and a hydrant is placed between the two tanks so that the men can be instructed in pumping from hydrants as well as from suction.

Water drawn from a hydrant can be directed into the woods, thus making it possible to observe and calculate ranges of streams with different pressures, and different sizes of tips used.

A smoke house has been constructed, and provision is made so that men can enter through a scuttle



Airplane View of the New Drill School and Fire Station

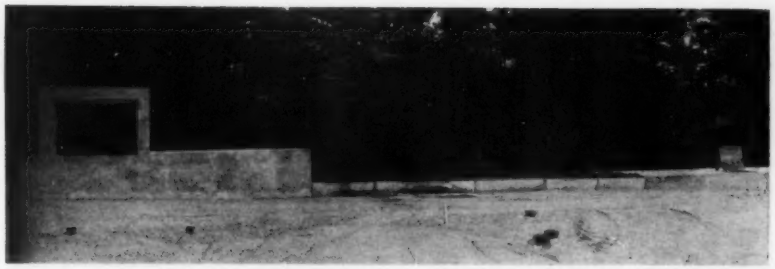


Six-Story Drill Tower at Brookline's New Fire School Layout

in the roof of the building as well as though a door placed in the wall.

The scuttle is designed to give the men practice in entering structures such as basements, which may be encountered in fire fighting operations.

A storage building, fifty feet long by ten feet wide by twelve feet high, is included. It is equipped with an end door. It provides for the storage of all of the ladders used in the drill school, the ladders being placed on slides similar to those used on a single-bank ladder truck. Shelves are provided for the storage of all small equipment.



The Question of Water Supply

At right, cistern for taking suction. Left, cistern with shield over it, is for receiving fire streams. Water from this cistern flows through a ten-inch main to the suction cistern.

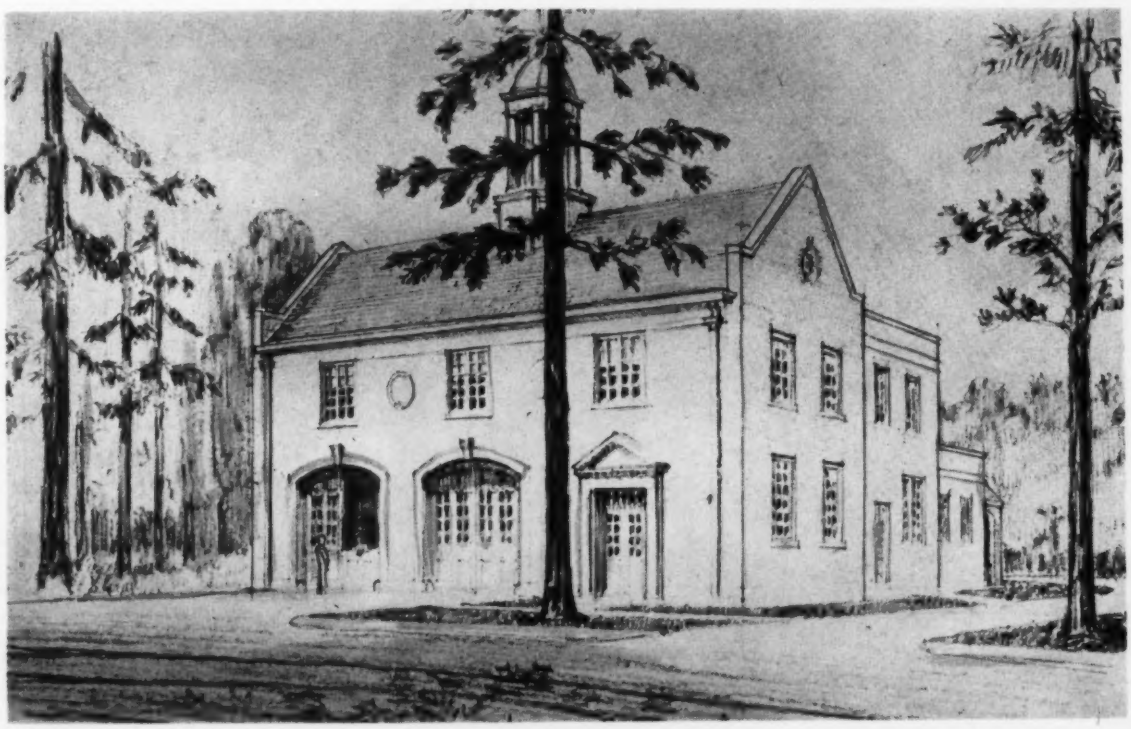
Six-Story Drill Tower

The drill tower is six stories high, meeting all modern requirements. It is built of steel, concrete and brick and a six-inch main feeds a standpipe within it, and provisions are made for taking lines off the standpipe on each floor level. A siamese is also provided for Fire Department connection, so that pumpers can deliver to the standpipe system. All floors are drained into a soil pipe and then out of the building. Standard fire escapes have been installed on the outside of the building, and standard fire shutters are provided on all windows so that men can be taught how to open them. They also protect the interior of the tower from snow and rain during stormy weather.

The first floor of the drill tower has shower baths and sinks for the men who are drilling.

The drill yard is covered with macadam paving of a type that will not soften under the summer sun, so that men will not slip in going through their evolutions, even during hot weather.

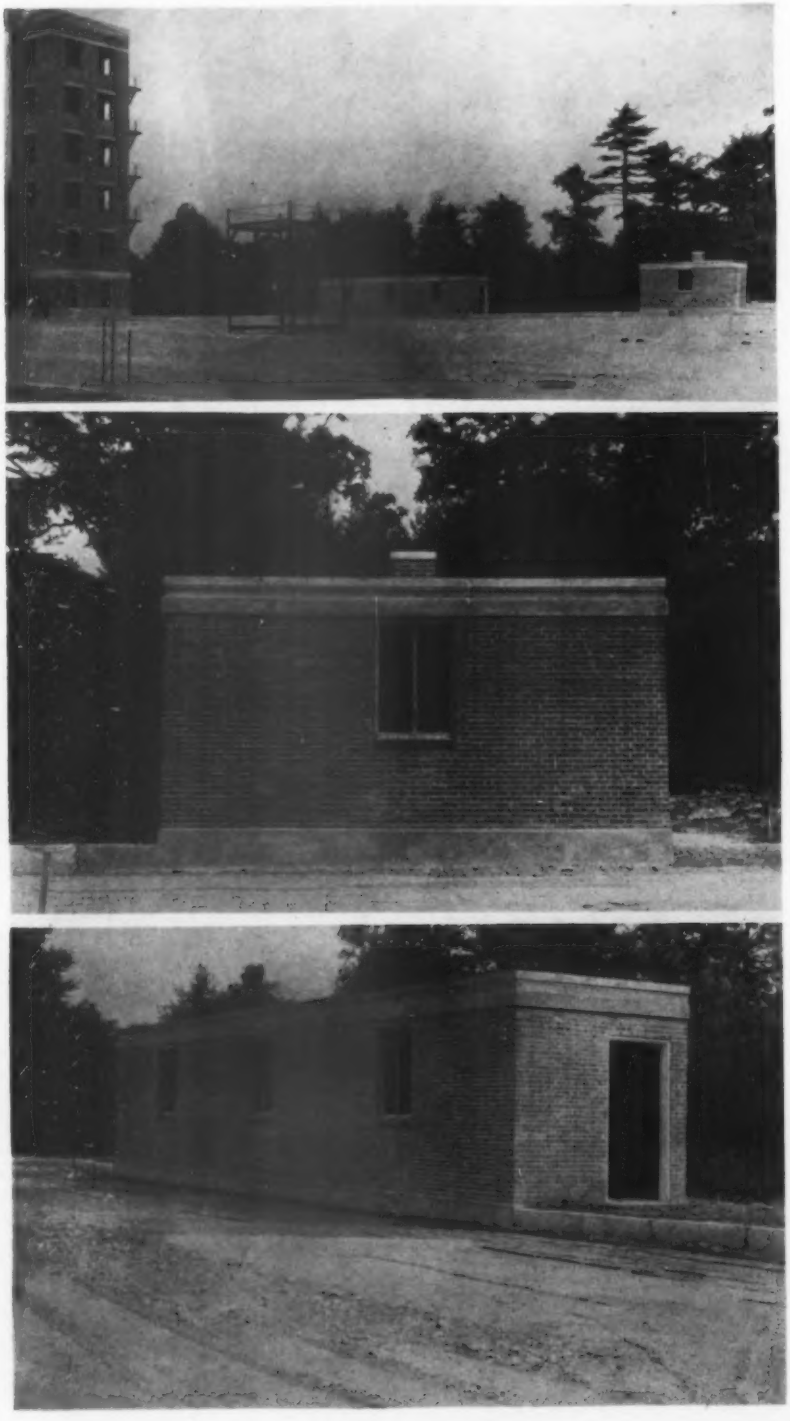
Drill net for the tower was built



Architect's Sketch of the Brookline Station

by the Atlas Company; ladders are by American LaFrance and Foamite Company, and all other equipment such as guns, etc., were furnished by the American Fire Equipment Company of Boston. The project complete cost $132,000, exclusive of the land, which the town has owned for many years. The illustrations herewith show some of the features of the Brookline fire station and school.

The project was carried out under the direction of Fire Commissioner George W. Good of Brookline, who labored hard to secure authorization the necessary appropriation.



Views of the Drill Yard and Buildings

Upper, view of the drill yard showing, left to right, drill tower, cellar pipe platform, equipment building, and smoke house.

Center, smoke house provided with a roof scuttle for drill work.

Lower, equipment building which has racks inside for the storage of ladders, and shelves for equipment.

New York State Firemen Convene

The sixty-sixth annual convention of the Firemen's Association of the State of New York was held on August 15 to 18 at Flushing, Long Island, the largest gathering in the association's history.

During the convention, all of the officers of the association were re-elected. They are J. McConnell, Flushing, President; Levi L. Rogers, Potsdam, and Leon H. Ingersoll, Cincinnatus, Vice-Presidents; Fred. A. David, Fort Howard, Secretary; and William H. Swartwout, Brooklyn, Treasurer. Memorial services were conducted for the fifty-four members of the association who died last year. Lieutenant Governor Charles Poletti, representing Governor Herbert Lehman, praised the unselfish devotion of the volunteer firemen to their communities.

As a part of the program, there were various department contests and exhibitions including ladder climbing, rescue work, first aid, and similar competitions.

A high spot in the convention was a colorful parade of modern apparatus, old fashioned equipment, and scores of bands. It took about five hours for the 10,000 taking part to pass the formation point.

Tetanus Prevention

Dr. Edward J. Sawyer, Surgeon to the Boston Protective Department, reports that he has immunized the entire personnel of the department against tetanus, familiarly known as lock-jaw. He strongly advises this procedure in all Fire Departments because of the unusual exposure of the men to the danger of tetanus infection.

The active immunity engendered by the toxoid of tetanus assures permanent protection against the risks of tetanus, risks which may result from open injuries or from insignificant wounds which might pass unnoticed or untreated.

This procedure is especially valuable because of the increasing percentage of anaphylactic reactions to horse serum which the administration of the usual prophylactic dose of 1,500 units in horse serum may produce. The toxoid produces no sensitivity phenomena.

The immunization is accomplished by two hypodermic injections at ninety day intervals.

The French Army has adopted this method for several years and Dr. Sawyer would like to hear of other Fire Departments following this procedure.

Chief Designs Baby Incubator

Chief Richard A. Magee of Truro, Mass., is also an inventor. He has designed a special type of baby incubator which will be added to the equipment of the lower Cape Cod ambulance to be ready for service in case a baby is prematurely born.

Fire Prevention Week

—and how Fire Departments Participate in it.

EACH year fire departments from coast to coast are taking a more active part in promoting Fire Prevention Week activities. And to determine the nature and extent of participation by these departments, a survey was recently made by FIRE ENGINEERING among a representative group of fire departments. In the pages following are outlined the programs carried out by those reporting. Therein may be found many useful suggestions for increasing the effectiveness of these annual fire prevention drives.

Kansas City, Kan.
Olander Lind, Chief

Our Department maintains year 'round fire prevention activities, as well as taking an active part in the Fire Prevention Week program.

Our Fire Inspection Bureau is constantly appearing before both civic and industrial groups in an effort to create a greater fire consciousness. Often after a fire in a manufacturing plant, they will meet to see what they have learned from the past fire and what they can do to prevent a recurrence.

Our programs for Fire Prevention week always fall very heavily on the radio, as we present different speakers each night, and to each is assigned a particular hazard. On the closing night the Chief will generalize on what the preceding speakers have talked on. During the day broadcasts, the news commentator will give little quips in connection with his news broadcasts, which are given on each hour during the day. In this way we get at least twelve reminders to the public.

In addition to the radio, we often have a joint meeting of the various civic clubs for a luncheon meeting, at which some nationally known speaker talks on fire prevention.

Teams of firemen inspect every school during the week, executing a fire drill. Then, while one of the firemen addresses the assembly, the others thoroughly inspect the school and make a written report to the Fire Inspection Bureau. We also utilize the dramatic classes of the various high schools and junior colleges to produce and enact short fire prevention playlets.

Often during the week we invite the school children of the city to attend a fire show which we present at the drill tower. The show usually lasts an hour and includes almost every evolution known to the fire service. We have had as many as 25,000 attend these fire shows.

We also request the clergymen, through the Ministerial Alliance, to start the week off with talks regarding fire prevention, from their pulpits.

Spokane, Wash.
W. P. Payne, Chief

Spokane has for several years held a very complete observance of Fire Prevention Week. Our program for this year will be just as thorough as it was for 1938, which was as follows:

Trailers were shown at the five best theatres depicting the scene of a large fire, with this title—"Fire Destroys Property Worth $300,000,000 Annually and Takes the Lives of 10,000 Men, Women and Children—Make Fire Prevention Your Main Intention."

Stickers were placed on the menus of all restaurants and hotels, with our slogan "Make Fire Prevention Your Main Intention."

A likeness of a fireman's head was stenciled on the sides of street busses, taxis, cars and trucks. The fireman had his hands cupped to his mouth and was calling "Lend a hand to help prevent fire."

Signs Placed on Boxes

Signs were placed on all alarm boxes, reading: "Think! A false alarm may cost a human life!"

Publicity in all papers calling attention to every citizen's responsibility in the war to cut fire losses.

A proclamation was issued by A. B. Colburn, Commissioner of Public Safety, making our campaign official.

We had an old steamer, a new pumper, and the aerial ladder truck on display downtown with appropriate signs.

We gave demonstrations with the aerial ladder truck every noon, a different building being used each day, and fire prevention talks were given in conjunction, using a police radio equipped car.

Displays were placed in six downtown store windows.

We wrote letters to all churches requesting the pastors to stress fire prevention in their Sunday sermons.

A large Neon sign was displayed across our main street with the slogan, "Make Fire Prevention Your Main Intention!" Also, a large banner was displayed across the same street during daylight hours.

Talks were made in all schools, forty-two fire drills were conducted, eleven Boy Scouts and Camp Fire Girl groups were addressed, nine talks made before civic groups, and five radio talks were given each day.

The Rotary Club gave a luncheon at fire department headquarters on Thursday noon, with over 300 of Spokane's business and professional leaders in attendance. Capt. Burton and Inspector Waye, in charge of Fire Prevention, gave talks, as did Commissioner Colburn and myself. Demonstrations were given in ladder drills, first aid, artificial respiration and use of tools and equipment used by the department. The program was highly successful, and many favorable comments were made on the work the department is doing in fire prevention. A fire prevention picture was shown in a vacant store room on our main street, and a fire demonstration was given in the same room.

You will note that we do participate in Fire Prevention Week and we have received national recognition for our efforts.

Memphis, Tenn.
Irby Klinck, Chief

Over a long period of years, the City of Memphis, in cooperation with practically every civic and commercial organization, has annually conducted Spring Clean-Up and Fall Fire Prevention week campaigns. These efforts have caused a remarkable reduction in loss of life and property from fire.

In 1938, the Memphis Council of Civic Clubs, in cooperation with the Memphis Fire Department, coordinated the various civic organizations, public-spirited citizens, and schools, in one of the finest Fire Prevention week programs ever attempted.

For the past two years, 1937 and 1938, Memphis has been awarded the Grand Prize for excellency in Fire Prevention by both the National Fire Protection Association and the National Fire Waste Council of the United States Chamber of Commerce. Naturally, we are very proud of these honors, and it is our intention to enter the contests again this year, and retain for our City this splendid recognition.

The Fire Prevention program in Memphis is a year-round activity. A Fire Prevention Campaign in Memphis involves many organizations. It is sponsored by the Memphis Council of Civic Clubs, with the following organizations cooperating:

Parent-Teachers Association
Memphis Chamber of Commerce
City Beautiful Commission
Public, Private, and Parochial Schools
Trades and Labor Council
Boy and Girl Scouts
Engineering Department
Fire Insurance Exchange
Building and Electric Department
Health Department
Radio Broadcasting Stations
Local Newspapers
Parks and Playgrounds
Red Cross

You will find listed below a digest of our 1938 Fire Prevention Week Program. This year it is our intention to duplicate as near as is possible the various activities of 1938. In addition, we hope to present to the public many new ideas in fire prevention.

1. In the parks and playgrounds, pageants were conducted, and poster contests were held.

2. There were also conducted neighborhood parades by children, starting at the parks and terminating at the various fire stations.

3. There was also conducted a mammoth Fire Prevention Parade in the

business district of the City, preceding Fire Prevention Week.

4. The School program consisted of inspection of schools by the Parent-Teachers' Association. A fire safety talk was made by the Safety Chairman of the Parent-Teachers' Association in each school room, a fire drill, distribution of home inspection blanks, poster contests, and safety talks over sound trucks. A special feature this year was a classroom discussion in all schools of an especially prepared pamphlet on fire statistics.

5. The radio program this past year was the most complete and well prepared one for the past several years. It consisted of dramatized Fire Prevention plays, interviews, and short talks.

6. The City Beautiful Commission, a city-wide organization which has a year-round beautification and clean-up program, carried on a complete City Fire Prevention activity.

7. The work of the committee on window displays, signs and photographs was unusual. They specialized in securing window displays in the suburban shopping areas, signs in windows and on bulletin boards of business establishments, providing signs for the neighborhood parades and parks.

Sidewalk and Street Signs

Especially do we call to your attention the new and novel feature of sidewalk and street signs, which carried a fire safety slogan, which were painted on prominent street corners in the business district, in front of schools, and theatres, and at the entrances to office buildings.

8. The Industrial Committee held meetings of night-watchmen and custodians at Fire Headquarters and conducted noonday Fire Safety meetings in industrial plants, sent out bulletins and other data to commercial establishments. Also, every commercial establishment, manufacturing plant, theatre, institution and all places of special hazards were inspected by uniformed firemen and building inspectors. Special moving pictures were projected before night-watchmen, custodians at Fire Department Headquarters, and conducted noonday fire safety meetings in industrial plants, sent out bulletins and other data to commercial establishments. Also, every commercial establishment, manufacturing plant, theatre, institution, and all places of special hazards were inspected by uniformed firemen and building inspectors. Special moving pictures were projected before night-watchmen, custodians and junior and senior high schools.

9. The Speakers Committee prepared fire prevention statistics and data for all other committees, provided speakers for neighborhood civic clubs, Parent-Teachers' Association, luncheon clubs, schools, parks and playgrounds, and for every trade union in the City.

10. The Institutional Committee inspected every orphanage, special homes for the aged people, working girls, and every other type of institution together with hospitals and clinics. They made complete inspections of buildings, made Fire Safety talks, and conducted fire drills where possible.

11. The Publicity Committee was most active in presenting to the public, through the medium of the daily and weekly newspapers, the message of fire prevention; also distribution of timely bulletins to Civic organizations, clubs, and individuals.

12. The local chapter of the American Red Cross distributed over 60,000 home safety pamphlets in the schools of Memphis and Shelby County, half of which were devoted to fire safety, during Fire Prevention Week.

13. The Labor Committee contacted the 12,000 trade unionists of this City during Fire Prevention Week.

14. The Boy and Girl Scouts cooperated in the distribution of signs and bulletins to the business houses, and also cooperated with the Parade Committee.

15. A new and most unusual feature of this year's campaign was the erection, by Boy Scouts, of a Fire Prevention display in Court Square, which is a public park situated directly in the center of our business district. Boy Scouts were constantly in attendance at this display, which consisted of two miniature houses, one showing fire safety conditions, and the other showing fire hazard conditions. Also, located at this fine display, there was a large display board, furnished by the fire department, showing all the various tools, implements, and clothing used by the firemen, together with fire alarm boxes. Approximately 10,000 specially prepared pamphlets on fire safety were distributed by the Boy Scouts to the citizens who attended this display.

16. A very successful poster contest was conducted among the students of the junior and senior high, public, private, and parochial schools. All posters submitted were bound together in book form and were placed in the display box which was sent to the judges of the two national contests.

Hopkinsville, Ky.
J. W. East, Chief

Our Fire Prevention Week Program will be the week of October 16. We will have Harry K. Rogers of the Western Actuarial Bureau with us that week to assist us in Fire Prevention and Inspection work. The Chamber of Commerce has a Fire Prevention Committee composed of some of the city's best business men. They are as follows: Fred Herfurth, Chairman; J. W. East, Chief; Frank Yost, Tom Jones, Harry Boyd, Gladstone Koffman, Allen Nuckels and George Crenshow. This Committee is helping plan part of the program and are giving full cooperation.

The program will consist of working through all the city schools; we expect to do inspection work in the entire city of both homes and business houses. We will have a big parade one day of that week, and we will have a display in the business district pertaining to fire hazards.

We have planned to have a demonstration downtown of hose and ladder evolutions and rescue work. I have also planned to parade town once or twice daily with a fire truck, advertising fire prevention with banners on the truck.

Sixteen Boy Scouts will assist us with our resident-inspection work. On Thursday of that week there will be a joint meeting of the Chamber of Commerce and all civic clubs at a luncheon, where an adddress on fire prevention will be delivered by Harry K. Rogers.

We will also have Capt. V. A. Beam, Secretary, Kentucky State Firemen's Association, for part of the week's program.

Bremerton, Wash.
Ernest Yett, Chief

Our Department participates in Fire Prevention Week each year. Last year a great deal of work was done through the Bremerton and Kitsap County School system. This year we plan to increase our activities considerably. Last year we enlisted the help of high school students who gave talks. A competent authority in fire prevention held a class in Bremerton about two weeks before Fire Prevention Week and furnished each student with a text book and instructed them in giving fire prevention talks. There were about twenty high school students enrolled in this class, and they were taken from both city and county schools.

Training Class

Each student who enrolled in the class was given an opportunity to speak during the week, and the system used was for a member of the Bremerton Fire Department to give a short introductory talk and then introduce the speaker. The speaker then gave a ten-minute talk using the large cut-away poster of the "34 Common Causes of Fire." The Fire Department member then closed with instructions to the students in the use of the literature furnished, and asked them to continue Fire Prevention throughout the entire year. Talks were given to thirty-five schools. A play was written by a member of the Bremerton High School and presented to several schools.

Home inspection blanks were given out to each student within the city limits of Bremerton with instructions that the blanks be returned to the teachers and turned over to the Bremerton Fire Department for survey. A copy of the "34 Common Causes of Fires" was given to each student. It was found that about 95 per cent of the blanks were returned to the Fire Department. Fire prevention talks were given to service and fraternal organizations; letters were written to twenty-seven ministers by Chief Yett of the Bremerton Fire Department, asking each minister to include a short message on fire prevention in his sermon for October 9, or October 16. A copy of the "Startling Facts About Fire" was attached, from which they could derive enough material on which to base their messages.

The Bremerton Fire Department held open house throughout the week and invitations were extended to all fraternal organizations, service clubs and churches in the city. A member of the fire department conducted each guest through the fire station explaining common causes of fire and the use of the various types of fire fighting equipment; posters were furnished for public buildings, schools and business houses throughout the city; window displays were prepared by several firms in the city of Bremerton.

All theatres, hotels and service stations were visited, and inspected, after which instructions were given in the use of private equipment, the method of emptying the buildings, etc. All mercantile establishments were visited and their fire escapes checked, after which they were instructed on the use of private equipment.

Menu cards were furnished by the Kitsap County Association of Insurance

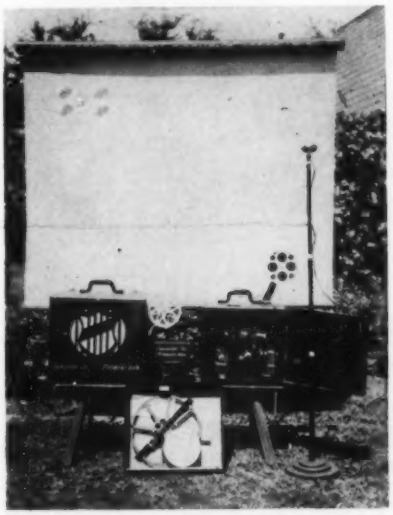
Men. Sidewalks in the main business district were stenciled, as well as important corners; "Every Four Minutes," furnished by the Northwestern Mutual Fire Association and showing the cutaway of the dwelling house with the "34 Common Causes of Fire," was given to 2,334 students of the Bremerton schools, and 1,250 county students. Home inspection blanks published by the same company were also distributed to 2,334 Bremerton students.

An eighteen-page booklet, entitled "Once Upon a Time," giving the story of "Smokey," the veteran fire horse, and his friend "Sandy," the dog, was given to a total of 1,402 grade school students in the county.

Five thousand envelope stuffers were sent out in the Bremerton city water bills; newspapers carried fire prevention messages furnished by the Chamber of Commerce and Chief Yett. Two half-page advertisements were run during the week by Bremerton insurance agents and carried a fire prevention message from Chief Yett; fire drills were held at all schools during the week, and all three theatres showed special fire prevention short-run pictures for all seven days of the week.

Lancaster County Firemen's Association
R. C. Heagey, Past-President

Several years ago our Firemen's Association decided that movie projector



Appeal Through Pictures
The Lancaster County, Pa., Firemen's Association uses a motion picture machine with a public address system, to broadcast the lesson of fire prevention.

equipment would be the best investment we could make to further fire prevention in our county; we consequently purchased this equipment, and arranged programs featuring fire prevention films, which have proved successful insofar as interesting the public.

Wilmington, Del.
William J. Lutz, Chief

We have participated in Fire Prevention Week for the past nineteen years. Our program for this year will be opened by a proclamation issued by the Mayor calling attention to the coming of Fire Prevention Week. Fire prevention slides are used at the various motion picture houses. The entire city is inspected during Fire Prevention Week by the Marshal's office and the off duty platoon of company officers and firemen.

The words "Fire Prevention" are painted on the street beds throughout the City in more than 157 places. Fire prevention signs are displayed at all fire stations. Twenty-five thousand chimney-cards are distributed requesting that the chimneys be cleaned before starting the fire for the winter. Fifty thousand fire prevention stickers are used on mailing matter. Two thousand large fire prevention posters are displayed in the city. Fire drills are held in all schools in the city, and addresses and plays pertaining to fire prevention given at the schools. We also have a radio broadcast. We also give instruction at business intersections and residential districts as to how to send alarms in when fires occur. In addition we have a meeting of the Industrial Fire Chiefs Association with watchmen, janitors, caretakers, etc., present with a prominent speaker on fire prevention presiding. Pictures are also shown.

Decatur, Ill.
William Platt, Chief

This department observes Fire Prevention Week each year. This year our program will include exercises and speeches at all grade and high schools, as well as city-wide inspections. We are also planning to have speeches made before all luncheon and other social clubs. Radio broadcasts and newspaper publicity is scheduled, as well as a fire prevention parade and window displays in some of our leading stores. Fire drills will also be held in all schools, and leaflets on fire prevention will go into every home.

Birmingham, Ala.
A. Brown, Chief

Our Fire Prevention Week program for this year will include delivery to all schools of Home Inspection Blanks, as well as talks to schools by members of the Fire Department.

House to house inspections by members covering the entire residential district, will be made. Talks will be given to civic clubs, and probably a radio skit.

Ashland, Wis.
W. A. Saunders, Chief

We observe Fire Prevention Week and plan this year to give talks before different clubs and social organizations and to school children. We also plan to distribute cards to school children inquiring whether their parents would welcome a home inspection by a member of the fire department.

Hibbing, Minn.
Napoleon Ayotte, Chief

Our Department participates in Fire Prevention Week by having daily inspections during that week in addition to the inspections we have three times a year. This is done by using the night shift men, alternating, so every man does the work. This year we are now completing our second inspection and receiving very fine cooperation from the Junior Chamber of Commerce and Boy Scouts. They now have some twenty to twenty-five tons of old waste paper, rags and all kinds of rubbish which create fire hazards. When these fire hazards are found the Chief is notified and the cleaning work is done by village employees. All department inspectors are required to file reports of their findings and make diagrams of buildings asked for by the Chief from time to time.

We plan to extend our inspection work this year to all private homes. The number of inspections we make depends upon the number of telephone calls we receive requesting such inspections. The public seems to appreciate the service judging from the fact that from January first of this year to date we have made 730 private inspections, which justifies my belief that every home in Hibbing will be inspected each year. Our fires have also been reduced considerably since these inspections have been made. Our social newspapers and broadcasting station are very generous with the space and time, which is taken up by the Junior Chamber of Commerce, Boy Scouts and Chief. There are now forty Boy Scouts taking a training course in fire prevention from the Chief. At the end of the year they will receive awards at a banquet held in their honor. Next year a fire prevention Captain will be appointed from each school class, starting with the fourth grade. Awards will then be given to the five most active classes. This, I am sure, will add greatly to the work now being done.

Sioux Falls, S. D.
Carl Hunt, Chief

Our Department does participate in Fire Protection Week activities and this is our program this year:

General inspections will be made by the whole personnel of the Department, talks over the radio by members of the Department and talks at schools will be given; parades about town with trucks carrying fire prevention signs will be sponsored; and during clean-up week in the spring and fire prevention week in the fall we go out and burn weeds and grass on vacant lots. Also, one night during fire prevention week we put on a demonstration using all the evolutions of the Department, which goes over big with the public.

Knoxville, Tenn.
C. M. Johnson, Chief

We have a Fire Preventon Bureau composed of a Chief Inspector and three Inspectors. The Bureau carries on a well rounded program for the entire year, putting on special campaigns, lectures, exhibitions and showing fire prevention pictures etc.

We always participate in Fire Prevention Week with a very extensive program.

We plan this year to carry on a program in the schools of fire drills, essays and poster contests. The students usually work out their own program with our assistance. This may take any form, such as plays, etc. Where it is desired we furnish speakers for the schools. We do not like to wear them out with speeches and only furnish this on request.

We always have window displays and

posters in windows of all business houses. We carry on a radio program, consisting of spot announcements and a speaker a day on each of our two radio stations.

We endeavor on these radio programs to select speakers from all walks of life in order that their appeal may be more general. We plan to use rubber stamps announcing Fire Prevention Week on all city mail, including light and water bills, and hope to be able to secure their use among our business houses, etc.

We intend to carry on the home inspection work through the schools furnishing blanks for the purpose. We have a very attractive pamphlet which we will distribute in the schools.

Schenectady, N. Y.
James J. Higgins, Chief

Our program for this year is the same as for 1938 and will consist of posters, stickers, trailers to be shown in all theatres at all performances, distribution of pamphlets, a poster contest, talks before civic clubs, Boy and Girl Scouts, schools, parent-teachers associations; radio talks and daily flashes, additional inspections, fire prevention plays in schools, exhibition of drill tower and daily releases in the morning and evening papers.

Seattle, Wash.
William Fitzgerald, Chief

This Department always participates in Fire Prevention Week, besides maintaining fire prevention activities continuously throughout the year.

The proposed program for this year's Fire Prevention Week includes the following:

1. Distribution of ten thousand fire prevention windshield stickers, replicas of traffic slips.
2. Posting of five hundred fire prevention signs on fire hydrants throughout the business districts of the city.
3. All schools in the city, public and parochial, will conduct a mass fire drill at 2:15 p.m. exactly on Wednesday of Fire Prevention Week under the supervision of the Fire Department.
4. Each high school has a Junior Fire Brigade, and the fire prevention program for each high school will be sponsored by this group. Naturally, the program will vary with each school, but they all will be fire prevention programs.
5. Fifteen hundred fire prevention posters will be distributed by firemen to the stores and business houses of the city for window displays.
6. Local radio stations, seven in number, will give spot announcements throughout the week and radio time for fire prevention talks and programs.

Maryland State Firemen's Association
J. Alfred Fisher, Jr., Chairman, Fire Prevention Committee

The Fire Prevention Committee of the Maryland State Firemen's Association will this year endeavor to bring more fire prevention talks and facts before the people of Maryland. A series of radio talks are being arranged to continue throughout the year. The school children will be reached by posters and speaker at various intervals during the year. The State Department of Education will be asked to support this year-round endeavor. A bulletin will be issued monthly giving suggestions to fire companies to help carry out this program in each locality. Business men will be contacted through the Chamber of Commerce and civic clubs. Leading newspapers are being asked to cooperate by publishing pictures and articles of fire prevention at least twice monthly.

Special efforts will be exerted during the week of October 8 to 14 for Fire Prevention, and also during the Christmas holidays, and a spring fire prevention clean-up campaign.

The Fire Prevention Committee is cooperating 100 per cent with the State Insurance Commissioner in the carrying out of his Fire Marshal's plan. Through the Insurance Department head, John B. Gantrum, Volunteer Deputy State Fire Marshals will be appointed. The Fire Marshal law has been on the Maryland law books for some time but has been inactive due to lack of funds. This year, however, firemen have offered to serve gratis and plans are being made to put the law into working condition in the very near future. A special school conducted by the Fire Service Extension Department of the University of Maryland, Chief J. W. Just, Director, was held August 17 and 18. At the end of the course an examination was held and appointments of the special deputies were made from a list of those passing the examination.

Omaha, Neb.
A. W. Olsen, Chief

Our Department participates in Fire Prevention Week by presenting radio programs in conjunction with the Chamber of Commerce and the Omaha Safety Council; by having special programs in the schools with the aid of the Junior Fire Patrol members, and by distributing special Fire Prevention Week publicity to all dwellings.

We usually take advantage of the Fire Prevention Week publicity to start our regular fall inspection of commercial buildings throughout the city.

10 Ways to Burn Down Your Home and 10 Easy Ways to Avoid it . .
WRONG
RIGHT
Flames Kill Boy, 8, as Parents Look On
Sunnyvale, Cal., Aug. 18 (UP)—Flames which roared through a residence here today burned to death 8-year-old Robert Lack while his parents stood by, unable to reach him.
The father, Charles Lack, a cook in a cannery, guided his wife and infant son to safety.
Tuxedo Park, N. Y., Aug. 9 (UP)—Mr. and Mrs. William T. Adee, prominent in eastern society, were burned to death early today in a fire which destroyed their big, rambling home.
Their 21-month-old son, George T. Adee, their only child, was saved by the heroism of a young nursemaid and a volunteer fireman with a broken arm.
65 percent of the fires and 60 percent of the deaths by fire occur in private homes. The Omaha Fire Department regularly inspects all commercial properties in the city but we do not have the necessary manpower to cover Omaha's 47,000 dwellings. WE NEED YOUR HELP.
Fire prevention has paid big dividends in Omaha. Our annual fire loss the past 5 years has been reduced from a previous average of $800,000 per year to less than $300,000 per year
IS IT WORTH A FEW MINUTES OF YOUR TIME TO PROTECT YOUR HOME AND LOVED ONES FROM FIRE?
OMAHA FIRE DEPARTMENT
W. H. DORRANCE, Superintendent
DEPARTMENT OF FIRE PROTECTION AND WATER SUPPLY
403 City Hall
A. W. OLSEN, Chief
DEPARTMENT OF FIRE PROTECTION BUREAU OF FIRE PREVENTION
319 S. 19th St

A Lesson in the Right and Wrong Methods

During Fire Prevention Week, the Fire Department of Omaha, Neb., distributed a circular, as illustrated, to the 47,000 dwellings in the city. The work was done by the 1,300 boys and girls who belong to the local Junior Fire Patrols established in all public and parochial schools. Homes were inspected by uniformed members of the Fire Department.

Tallahassee, Fla.
T. P. Coe, Chief

We participate in Fire Prevention week by giving talks before civic clubs and over the radio. We also have an intensive residential inspection drive and place banners depicting Fire Prevention Week slogans on the apparatus.

Norfolk, Va.
Edward J. Cannon, Chief

Our Department will participate in Fire Prevention Week to the extent of having special inspections made by the entire personnel in connection with the regular activities of the Fire Prevention Bureau, which will include short lectures at hospitals, schools and civic organizations; and, if possible, short talks may be made over the radio.

We also consider every second week throughout the year as a Fire Prevention week, as we inspect every mercantile establishment, factory, warehouse, etc., semi-monthly. Private homes are inspected upon request.

Gadsden, Ala.
Elbert L. Mount, Fire Marshal

We intend to observe Fire Prevention week this year by inspecting thousands of homes and schools. Last year our Department inspected over 5,000 homes. It is our aim to double the number this year. These inspections are made by uniformed firemen. Radio and the newspapers will be used in this campaign. Each school will be visited by a member of our Department, who will visit each class room and give a talk on fire prevention. Home inspection blanks will be used in schools. Each civic organization will also take an active part in this campaign. Our City was awarded First Place in Alabama last year for activities during Fire Prevention week and it is our hope to be able to hold first place again this year.

Englewood, Col.
R. George Woods, Chief

We participate in Fire Prevention Week by having window displays in miniature of fire hazards, and photographs of the different types of fires that occur in our community and vicinity throughout the year. We also show a sixteen millimeter film of fires that have occurred during the past year, featuring fire prevention and safety.

We have a Fire Prevention Committee that makes inspections of the schools and buildings throughout the year. This Committee also holds fire drills in the schools at various times during the school term.

Our publicity committee also publishes in the papers the reasons for, and methods of, preventing such fires which occur daily.

Annapolis, Md.
Jesse A. Fisher, Chief

We take a very active part in Fire Prevention week, the Chamber of Commerce, Rotary, Civitan and Kiwanis Clubs giving us their cooperation and support, which helps to interest the citizens.

Our program includes the announcement of Fire Prevention week in the various churches, regular inspections of all public buildings and the visiting of private homes. Visits to the schools are made by uniformed firemen who give fire prevention talks and explain the necessity of regular fire drills. They conduct fire drills with some of the exits blocked. They also distribute home ispection blanks to the school children, explaining the proper procedure in making inspections of the home, and how to make corrections or have them made.

During the week the speakers are sent to the various civic club luncheons and meetings of the ladies clubs; speakers are also sent to Boy Scout and Girl Scout meetings. Newspapers cooperate by having daily articles on fire hazards and the prevention of fire.

A poster contest is to be conducted in the schools and prizes awarded to the student making the best poster and the school having the greatest number of posters entered. Displays of fire hazards and corrections will be made in windows of insurance agents and other display windows available for the use of the Fire Department. Home inspection blanks are collected from the schools at the end of the week and are checked and followed up by inspections by the Fire Prevention Bureau. Moving picture theatres show short trailers on Fire Prevention during the entire week. Theatre programs have front covers dedicated to fire prevention. The telephone company has inserts with all bills mailed out asking each subscriber to cooperate to prevent fires. We have the cooperation of the Mayor and City Council and some financial support from them.

Moberly, Mo.
Mose Alexander

We observe Fire Prevention week by having a regular inspection in the business district and also one in our residential district. In addition, we give talks in the local schools on fire prevention, and run notices in the local paper urging the people to cooperate with us.

Minneapolis, Minn.
Earl A. Traeger, Chief

Our Fire Prevention Bureau and the active fire fighting force of this Department have always participated in Fire Prevention week activities. These activities are sponsored each year by the joint Fire Prevention Committee composed of members of the Civic and Commerce Association and the Junior Association of Commerce. This Committee is composed of representatives from the various commercial clubs of this city and included on it are representatives from the City Building Department, the Fire Prevention Committee of the City Council, Parents and Teachers Association, Boy Scouts, the Fire Prevention Bureau of the Fire Department, and other organizations.

The program this year will include open house meetings conducted at each fire station in the city on designated evenings to which the general public will be invited, and at these meetings demonstrations will be given by the firemen in the handling and use of all fire fighting equipment, and fire prevention talks will be given. The program will also include an intensive rubbish survey inspection by the Fire Prevention Bureau in the various business districts of the city and all complaints and requests for dwelling inspections will be handled by the bureau.

The Fire Department will also participate in several noon-day parades in various sections of the city. The Fire Prevention Bureau will distribute approximately 1,500 fire prevention posters throughout the city. There will also be numerous fire prevention talks on the several radio stations of the city and the newspapers will carry fire prevention articles each day during the week.

Roswell, N. M.
Rue Chrisman, Chief

We participate in Fire Prevention week by securing posters from the underwriters and putting them up in all business houses. We also give talks in the schools on fire prevention, as well as over the local radio station, and carry fire prevention notices in two daily newspapers. In addition we have inspections in all the business districts.

Pampa, Texas
Ben R. White, Chief

Our Department participates in Fire Prevention week by having firemen visit the schools and give talks on fire prevention and supervise fire drills. Also, with the help of local civic clubs, fire prevention posters and information concerning fire prevention will be distributed over most of our city. We make addresses over the local radio station concerning fire prevention and inspect public buildings in the business section.

El Dorado, Ark.
F. H. Smith, Chief

For the past eight years the El Dorado Fire Department has participated in Fire Prevention Week activities.

Each year a committee is appointed by the Chamber of Commerce to cooperate with the Chief, who is Chairman of the committee, and the following program has been carried out successfully for the past eight years: Posters are placed in all business places; talks are made at all civic organizations; fire drills and talks are made in all schools, not only in the city but also in several of the larger schools in the county. Letters are written to all ministers requesting that they mention Fire Prevention Week in the pulpits; also, home inspection blanks are distributed to all pupils. Playlets are given and publicity is carried through the medium of the press. Radio programs are also presented.

Jackson, Tenn.
B. L. Warlick, Chief

Our Department participates in Fire Prevention Week by inspecting all buildings in the commercial district, as well as factories, by having speakers in all schools, sending questionnaires to grammar schools, and by giving prizes for the best essays or playlets written on fire prevention.

Tyler, Texas
Henry Ginn, Chief

Our Department participates in Fire Prevention Week by giving lectures on fire prevention, as well as demonstrations, in all schools, churches, civic clubs, shows, by short radio talks, and by newspaper publicity.

No Conflagrations for Custer!

By PHILIP PALMER

FIRE protection is a national problem. Large cities have their elaborate equipment, the forest service their network of towers and radio stations and the small cities and towns their volunteer fire departments. Such a department is that of Custer, Mich., a small town in northwestern Michigan of 271 inhabitants. Practically all of the men in town, at least all of the active citizens, are members or potential members of the department, the barber, the grocer, the butcher, garage mechanic and tavern proprietor.

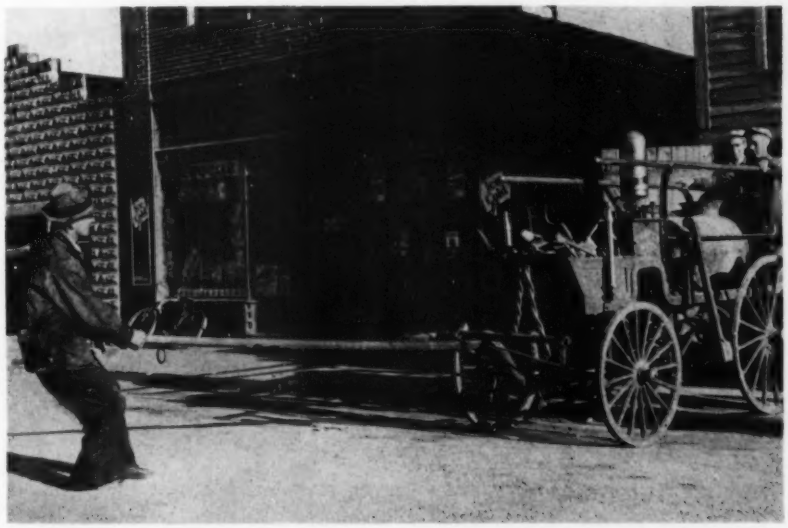
Once or twice a year, fire drills are held to keep the members in practice in case a fire does occur, and during the course of a year three or four real fires break out. When a fire is spotted, the person who discovers it runs for the fire station, rings the bell, and in no time everyone is there from Chief Brandenburg to Art Walunas from his beer tavern. And the kids all come in on the run and on bicycles. The hose cart is dragged out, then

Above: Fire Chief Dewey Brandenburg operates an automobile agency and garage. Here he is shown at his desk.

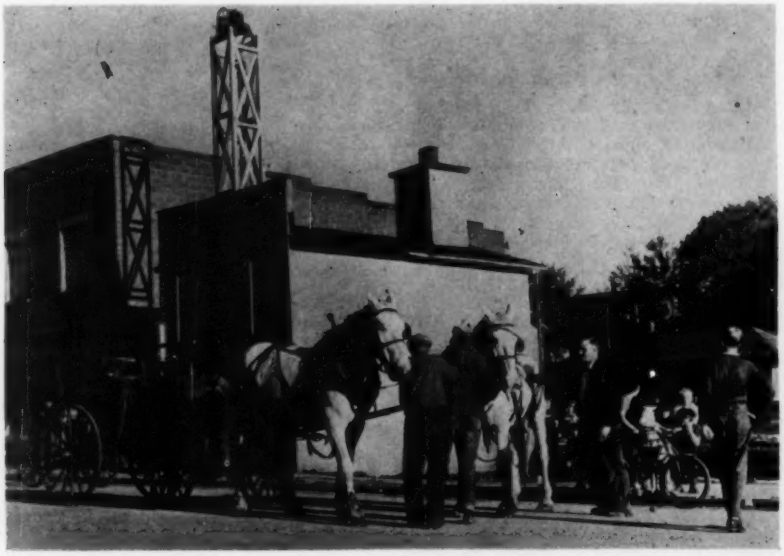
Left: Here's the main street in Custer, Michigan, a town of 271 population (at the time the article was written). And it has a real fire department, with plenty of volunteers.

Right: When the bell in the station sounds, the volunteers come on the run. Of course, some arrive on bicycles and the more opulent, in cars. There is no age limit in the Custer Fire Department, and everyone seems to know just what to do.

Right: Out comes the hose reel first. The big pumper cannot be removed until the reel of this two-piece company is clear of the building. This is a logical arrangement, for the lighter vehicle can be withdrawn by the first arrivals while waiting for reinforcements.



Left: The big pumper is moved out into the street by hand. It is one of the most modern hand engines in service in this country, and the brakes (handle bars) can accommodate up to twelve men. Four men can produce a fair stream, but higher pressures require more.



Right: When the pumper is out on the street, Charley Wordhead brings his team of horses in and Earl Johnson gives him a hand in hitching, while Bill Roche stands by ready to assist. The machine is not drawn by hand, for energy must be saved for the task of pumping.

The Pumper Performs at the Fire

the chemical wagon, and lastly the big hand engine which pumps the water. The pieces of equipment can be hauled by hand, with a car, or with horses.

The equipment which Custer now uses was purchased in 1907 to replace a bucket brigade, and this same equipment has been used ever since. There are no hydrants in town. Water is obtained by pumping from cisterns. The equipment consists of three pieces, the chemical wagon, the big engine which does the pumping and the hose cart, all of which are stored in the fire house.

Primitive though this setup may seem, it has saved many homes and buildings in Custer.

Hart Chief of San Antonio

On a recommendation of Fire and Police Commissioner Lipscomb, the City Commission of San Antonio, Texas, approved the appointment of C. A. Hart as Chief. Chief Hart has served as District Chief, and was Acting Chief since June 1, 1939.

Chief McFadden Dead

Chief William W. McFadden, Dayton, Ohio, died on the evening of August 10, while directing a basement fire in a down town cafeteria. At the scene of the blaze he was stricken with a heart attack, but was revived, and apparently had recovered, when he again returned to the blaze. After the fire was under control, he returned to the Signal House, where he suffered another but a fatal attack.

Chief McFadden became a member of the division December 4, 1901; was promoted to Captain in 1908; Assistant Chief in 1915; and advanced to Chief on December 27, 1934. He succeeded Frank B. Ramby, who had served as Chief for twenty-seven years.

At the time of his appointment as Chief, he was Vice-President of the Ohio Fire Fighters Association, and was also a member of the Firemen's Retirement Board.

He is survived by his widow, two sons, and two brothers.

Chief Davin, New York, Retires

Chief John Davin, New York Fire Department, in charge of Brooklyn and Queens, was retired on September 1, after forty-four years of active service, the last twelve years as Chief.

He joined the department in 1895 and became a Captain in 1903. In this capacity, he organized the first high pressure hose company — a three horse hitch. Later he became Battalion Chief and then Deputy Chief. On February 1, 1927, he was advanced to Chief of the Brooklyn and Queens Department.

Chief Davin was a member of the Board of Merit and also a member of the faculty of the Fire College, having lectured when the College was organized. He was active in the Holy Name Society of the Fire Department, as a delegate of the Brooklyn and Queens branch. Chief Davin was well known in the service.

Lightning Bolt Starts Fire

At the height of one of the worst wind and electrical storms for a number of years in Bangor, Me., the Bangor Central Station received a 'phone call for a fire in the heart of the business section. This call was followed by a box alarm.

The large stone building of the Utterback-Gleason Automobile Company was hit by lightning. The bolt struck the south side of the roof and crashed into the second floor, where more than twenty second hand cars were stored, causing an explosion that blew out second story windows and enveloped nearly all of the cars in storage.

Engines 1, 2, 3, 5 and 6 and Aerial Ladder 1 responded. Nine lines of hose were run with a total of 5,000 feet. Fire was under control after 1½ hours, and was confined to its original location. It was stopped a few feet from a large stock of automobile tires on the east end of the second floor.

Two firemen were injured, one with torn ligaments in his leg and the other was struck by a piece of falling cornice.

J. W. Randlette.

Jay W. Stevens Disaster Unit Makes First Out-of-City Run

A train and automobile crash at Tualatin, Ore., twelve miles from Portland, was responsible for the first out-of-town run for the New Jay W. Stevens Disaster Unit of the Portland Fire Department. The call was picked up by radio while the car was on the streets.

Two children, and their mother, who was driving the car at the time of the accident, were injured. A nine-year old girl and a fourteen-year-old boy were killed.

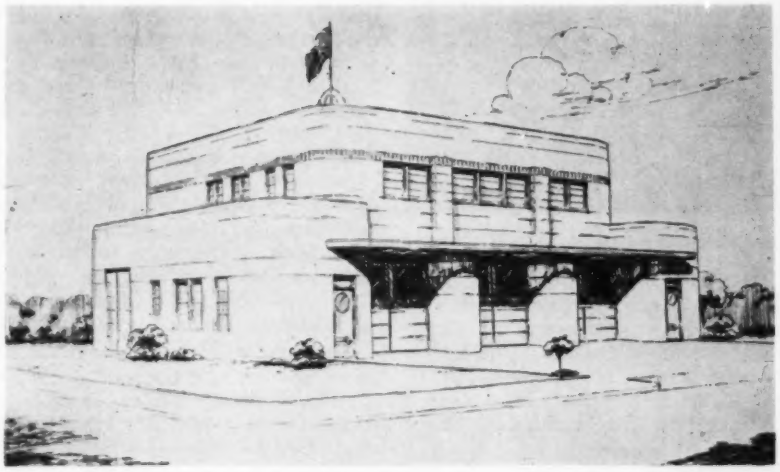
Dr. I. C. Brill, of Portland, was passing by at the time of the accident and, with the aid of the Unit, ministered to the injured before the victims were rushed to a nearby hospital.

Attempt to Revive a Victim of the Accident

Dr. Brill, and the crew of the Jay W. Stevens Disaster Unit, are trying to revive a boy by injecting adrenalin.

Fire Stations of the Coast

New Buildings of the Pacific Coast Area Show Present Architectural Trends



Architect's Sketch of New Station Under Construction at Huntington Beach, Cal.

DURING the past two years, many new fire stations have been erected in cities and towns in the Pacific Coast area. Simplicity of design, and utility, have featured these new structures. On this and succeeding pages are shown some which are typical of today's architectural treatment.

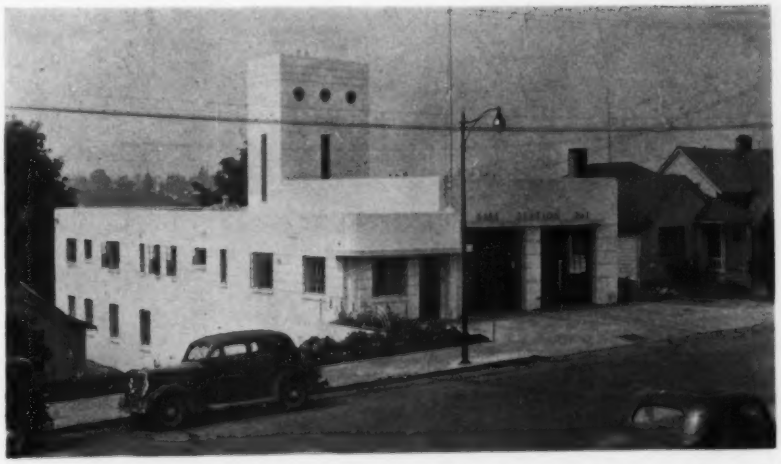
Huntington Beach, Cal.

A new two-story fire station is being built at Huntington Beach, Calif., with the aid of WPA funds. It is constructed of stucco, equipped with all the latest improvements.

The lower floor, which is sixty-two by fifty-six feet, has three doors for apparatus, with rooms on either side for offices and storage. The hose tower is in the rear. The upper floor, which is forty-two by fifty feet, has sleeping quarters across the front of the building and in addition, two bedrooms, locker room, bath and toilet room, kitchen, with recreation and school room across the rear.

The cost of this building is about $33,000, the city's share of which is about $9,000. It is expected that the building will be finished during the latter part of this month. J. K. Sargent is the Chief of this Department.

New Station at Hanford, Cal.



No. 1 Fire Station Recently Completed at Bremerton, Wash.

Bremerton, Wash.

A new fire station was recently completed for Bremerton, Wash. The building is a modern fireproof structure, one story and basement, reinforced concrete construction with all outside exposures fireproofed. Space is provided in the apparatus room for two pumpers and a ladder truck. Apparatus doors are steel, electrically operated, with provision for manual operation in the event of electrical failure. Heating is from overhead units with circulating fans. Motors are kept warm by floor radiators arranged for easy cleaning. A hose

New Central Headquarters Building for Bakersfield, Cal.

tower, 3,000 feet capacity, is provided with heat and ventilation.

Offices for the Chief are provided, adjoining the watch office, wherein are located controls for all traffic lights and fire warning crossing sirens and the fire alarm panel. Next to it is the battery room with batteries, generator set and rectifiers for operating fire alarm system. A light and airy dormitory is provided as well as a modern shower and bath room, locker room, modern kitchen, a library and reading room, and a large reception room. The basement contains a large recreation or meeting room, a work room and boiler room.

The station is strategically located between the high value and residential districts. Ernest Yett is Chief.

Bakersfield, Cal.

The old barn-like structure used as a central station and headquarters for the Bakersfield, Cal., Fire Department soon will be vacated by that department and will be demolished. The building was erected in 1904 after the original station had been destroyed by fire and has been in continuous use since.

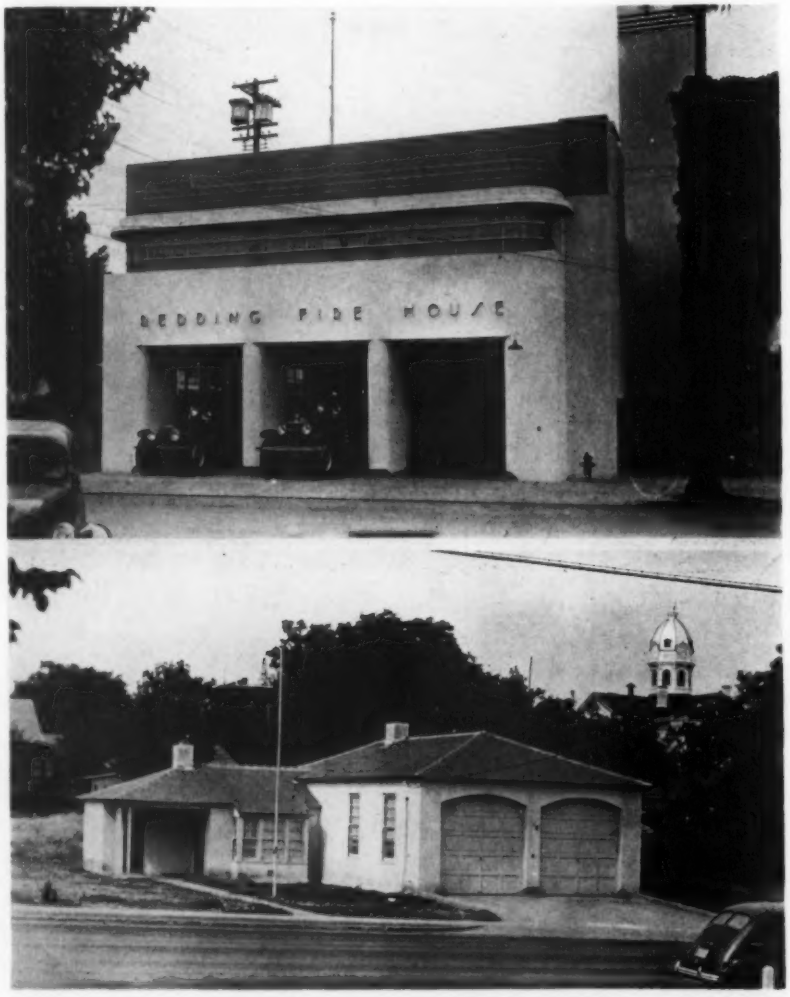
A new central station at Twenty-first and H Streets has been completed and will be occupied as soon as furniture and equipment arrive.

Built by funds derived from a five-year bond issue and a Federal PWA grant of forty-five per cent, the building, grounds and equipment will cost approximately $120,000. In addition to headquarters, the new building will house the Fire Prevention Bureau, one squad company, one engine company, one truck company and a reserve engine, with provision made for quarters for the additional engine company recommended by the National Board of Fire Underwriters.

Covering almost one-quarter of a block, the building is constructed entirely of reinforced concrete and is so designed and built as to be earthquake proof and fire proof. With an eye to the future needs of a rapidly growing city, the building has been designed to care for necessary enlargement of the Fire Department.

The building is, roughly, in the shape of a "U," with the open end to the north. On the ground floor, on the H Street side, are offices for the Secretary, Fire Prevention Bureau and Chief Engineer, and sleeping quarters for the Chief Engineer. At the north end of the main hallway is a modern rest room for women. Across the hallway from the offices, is a large classroom, designed for use of the Department School of Instruction. The classroom has a polished white maple floor, and windows covered with heavy opaque drapes in order that motion pictures may be used by the school. Ceilings of offices and classrooms are covered with acoustic plaster and office and hall floors are of asphalt tile blocks.

The apparatus floor, which takes up a large part of the base of the "U," is sixty by ninety feet and is of red concrete with a gray border. Walls



Two New Fire Stations at Redding, Cal.

are of concrete, finished in gray. The doors, of which there are four, are Kinnear steel rolling doors operated by electricity. Each door is provided with means for manual operation in the event of current failure. The three apparatus doors open automatically when an alarm is sounded. In the southwest corner of the apparatus floor is located the Watch Office, which is provided with latest type Gamewell equipment.

Next to the Watch Office are located quarters, office, bedroom and bath for the Assistant Chiefs, one of whom is on duty with each platoon. Quarters of the Assistant Chiefs are similar to those of the Chief Engineer.

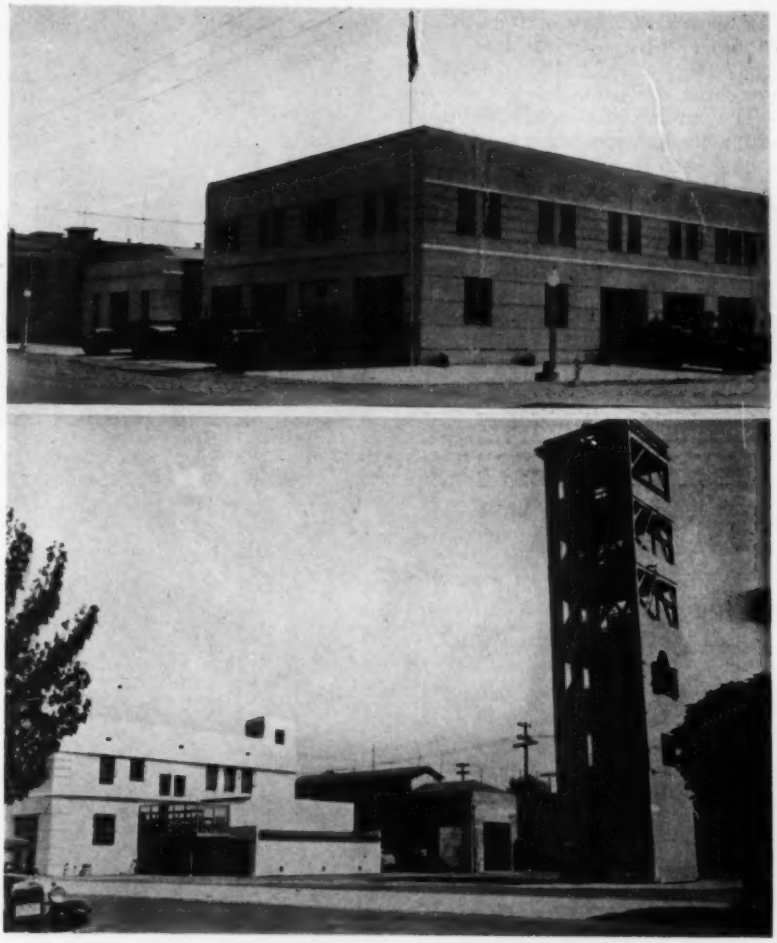
Wash Room Facilities

North of the quarters of the Assistant Chiefs is the locker and shower room. In this room are forty-four steel lockers, three showers, toilets and wash basins. Each wash basin is provided with an individual mirror and outlets are provided for electric shavers. Walls of the locker and shower rooms are of nile green tile and the floor is of ceramic tile. Toilet and shower partitions are of dark green finished steel.

North of the locker and shower room is the dormitory, sufficiently large to accommodate sixty beds. The dormitory floor is of asphalt tile and louvre lights are provided in the walls for night lighting.

On the second floor is located the squad room, dining room, kitchen, lavatory and machinery room for the cooling and heating system. A balcony extending over the apparatus floor is provided with a brass sliding pole. Floors of all rooms, except the machinery room, are of asphalt tile. The machinery room floor is of concrete.

In the basement are located the furnace and the compressors for the heating and air-conditioning system, together with the fire alarm charging board, transformers and necessary electrical equipment. The basement is of concrete.



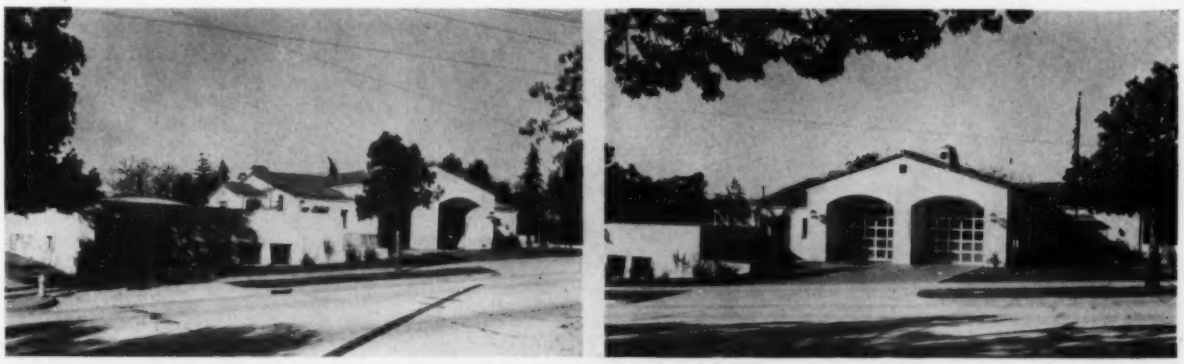
Two Views of New Station No. 3 at Fresno, Cal.

View shows set back of the station which permits apparatus clear view of traffic conditions before reaching street.

Rear view of Station No. 3, showing hand ball courts, rear of department shops, drill grounds and drill tower. W. R. Williams is Chief of the Fresno Department.

At the north end of the building is a four-story concrete drill tower which is a part of the main building and rises two stories above the main building. The drill tower is equipped with steel fire escapes standpipes and other necessary drill equipment.

All windows on the first and second floors are equipped with steel slat venetian blinds. Office desks,



Left, Repair Shop Remodeled from Old Reservoir Building at Pasadena, Cal. Right, Fire Station No. 6, Recently Built

chairs, files, etc., are of steel as are all beds. Chairs and tables in the squad room are of leather upholstery and chromium trim.

The entire building is equipped with a combination heating-air-conditioning system and is so designed as to permit of maintaining even temperature and humidity the year round.

Newark, Cal., Completes New Station

The new forty by sixty station recently completed at Newark, Cal., contains an apparatus room for two trucks, a dormitory and office equipped with two wall beds, shower and dressing room, club room, store room and kitchen in addition to a closet and four steel lockers. Joseph Pashote is Chief.

Two New California Fire Stations

Upper, station addition at Fontana, Cal., occupied on August 1, 1939. The addition includes a double engine room with an adjoining hose and drill tower of reinforced concrete, forty feet high. Earl B. Reeves is Chief.

Lower, station of Engine No. 2, Santa Barbara, completed in March, 1938 at cost of $7,600. C. L. Tenney is Chief.

The main entrance of the building, facing "H" Street is of glass brick.

Philip C. Pifer is Chief of the Bakersfield Department.

Pasadena, Cal.

In 1936, when the city of Pasadena abandoned the old reservoir at 1430 North Raymond Avenue, the Fire Department took it over and converted it into a complete shop for servicing and rebuilding fire equipment and reconditioning fire hydrants. In 1938, with the aid of WPA funds, an attractive new station was built alongside of it.

Fire Station No. 6 has an alarm room, a dining room, a kitchen, a combination bedroom and living room with in-a-door beds and a large bath and toilet room. The building is all-electric—hot water, cooling, refrigeration, heating, all being provided by electricity from the municipal light and power department. In the back of the building is a paved badminton court. The building is Spanish mission architecture of tan stucco with a red tile floor. The equipment consists of a standard Seagrave combination pumper and a Seagrave 750-gallon pumper.

E. F. Coop is Chief of the Department.

Court Finds Firemen's Cuts Illegal

A recent decision in the Middlesex, Mass., Superior Court ruled that the Woodburn, Mass., Firemen are entitled to recover back pay. This case was brought to court as a result of the city's drastic economy program which reduced the 1939 salaries by twenty per cent. The firemen contended that the Mayor had no right to make arbitrary reductions in wages of city employees. Now they are able to recover from the city the amounts of their unpaid salaries as checked by the city auditor.

NEW SUBSCRIPTION ORDER

Please send FIRE ENGINEERING to the name and address below and bill me for: ☐ ONE YEAR $2 ☐ TWO YEARS $3

Name .....

Position in Fire Dept. .....

Address .....

City ..... State .....

Above rates are for the United States, Canada, and Latin America.
Foreign Countries, $1 per year additional.

NEW SUBSCRIPTION ORDER

Please send FIRE ENGINEERING to the name and address below and bill me for: ☐ ONE YEAR $2 ☐ TWO YEARS $3

Name .....

Position in Fire Dept. .....

Address .....

City ..... State .....

Above rates are for the United States, Canada, and Latin America.
Foreign Countries, $1 per year additional.

Postage Will be Paid by Fire Engineering

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

First Class Permit No. 406 Sec. 510 P. L. & R., New York, N. Y.

FIRE ENGINEERING

24 WEST 40TH STREET,

NEW YORK,

N. Y.

Postage Will be Paid by Fire Engineering

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

First Class Permit No. 406 Sec. 510 P. L. & R., New York, N. Y.

FIRE ENGINEERING

24 WEST 40TH STREET,

NEW YORK,

N. Y.

FIRES IN BALES OF STRAW REQUIRE SKILL WITH STREAMS

New Stacking of Bales and Methods Have Resulted in Less Work and a Smaller Loss

By Charles Sweeney
Assistant Chief, Antioch, Cal.

EVERY city has a fire alarm box that generally accounts for the largest individual number of calls. In Antioch, Cal., it is Box 87, and a signal from that box generally means a fire in one or more stacks of straw.

Each stack holds 125 tons of straw, and to get the seriousness of such a call, one must remember that the plant of the Fibreboard Products Company, where paper is made, stores 50,000 tons of wheat straw.

Based on thirty years of experience, the department has developed a method of fighting such fires.

When the problem first developed, it was the practice to drown out the fire with the aid of 15 to 20 2½-inch streams. Stacks at that time were solid, with from 250 to 300 tons of straw in each. The large volume of water soaked the bales and caused the snapping of the wire binders. Then there was the task of moving the straw, and the loss through the material become mildewed and sour.

At present, we have developed the plan of piling the material in stacks of about 125 tons, with the lower bales flat, and the next row of bales placed on the side, the rows alternating in that manner. Vent holes are provided on each side of the stack, and the square foot area decreases with each layer of bales. The stacks form a pyramid. There are about sixty feet space between the stacks, to provide room for loading and unloading the trucks.

In the early days, there were many theories regarding the straw fires. Some of the favored ones were smoking, small boys playing with matches, etc. Strange to say, in many cases it was because owls had nested in the bales.

The department believed that the fires may have started because of spontaneous combustion. A test was made by erecting experimental stacks in which were placed light metal tubes. The watchmen were provided with thermometers on a string, and by lowering the instruments into the tubes, it was possible to learn the temperatures of the stacks. The findings bore out our theory.

In sections where weeds were numerous, or the straw had not aged, there were better chances for fires.

Section of the Field in Which More Than 40,000 Tons of Baled Straw Are Stored

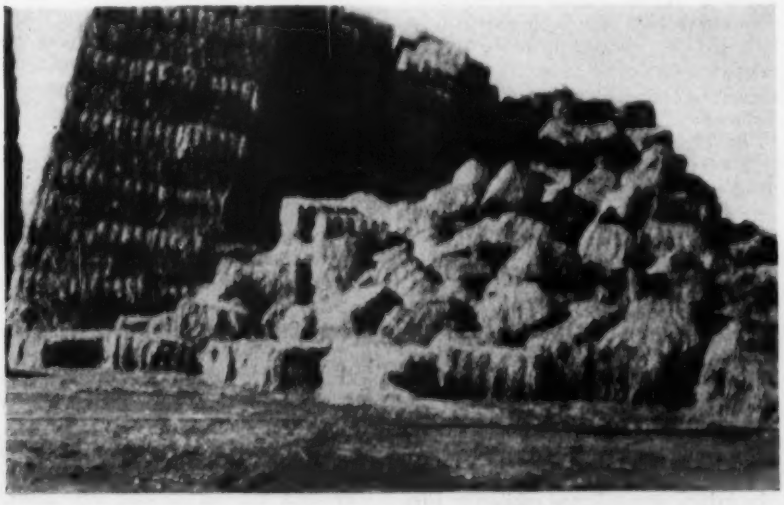
Job Made Easier

With the smaller stacks that are now made, the job of fighting a fire is rarely over two hours, as against eight hours when the straw was piled in large stacks.

When the department arrives at a fire, four 2½-inch lines are laid direct to the mill hydrants, which can deliver 2,000 g.p.m., at 125 pounds pressure. Such streams are used to protect the exposed straw. In the meantime, the pumper is hooked up and two 2½-inch lines are laid from the pumper. These lines are siamesed to 1½-inch lines, with ¾-inch tips. With the pumper developing 200 pounds pressure, the streams are directed to hit the bales and cause a fall, so that the bales will open and thus ventilate the pile. Water can then seep down the pile and cool the flames.

When the fire is in hand, all but two lines are cut off, and the Mill Department "takes over." The straw is immediately started on its way to the mill, to be used before the baling wires break and cause further damage. The Fire Department has full charge, and the plant superintendent has instructed his men to that effect.

Several times, the men used a lumber yard style tip to wet down exposures during a wind, and to cover any sparks that might be carried to neighboring stacks. There are men on the stacks to direct the hose streams. Directing streams from the ground is wasted effort.



Appearance of a Stack After the Department Has Extinguished a Fire

Charged With Arson

A laborer, fifty years old, of Belle Plaine, Ia., was charged with arson. He is accused of setting fire to a home. The fire was extinguished before much damage was done.

Liability for Injuries Caused by Fire Department Equipment

Opinions of Higher Courts on Subject and on When the Acts of Department are Ministerial or Governmental

By LEO T. PARKER
Attorney-at-Law

VARIOUS higher courts have held that not only the municipality, but the entire state, is interested in the maintenance of law and order, and in the protection of property from fire and conflagration. Therefore, the interest of a municipality extends not only to a single community, but over the entire commonwealth.

Another important point of law is that while the employment of officers for the preservation of peace and property may be in the hands of the municipality, the duties of those officers are, and in their nature, should be governmental.

Ministerial vs. Governmental Functions

Briefly stated, a municipal corporation in the discharge of its administrative duties, is viewed in law as having two separate capacities. One is private or corporate. Acts done in the performance of a corporate function are termed ministerial or proprietary. The other is governmental or sovereign, in the exercise of which injuries may be inflicted on the person or property of a citizen, without liability on the part of the municipality, although such injury may have been the direct result of gross negligence on the part of municipal officials and employees.

For illustration, in the majority of states, the law is well settled that a municipality is under no obligation to provide a Fire Department, in order to protect the property of its residents. When a city provides itself with a Fire Department, it is a governmental function, and it is the recognized rule that the employees in the conduct and operation of the Fire Department are not the agents and servants of the city, but that they act as officers charged with a public service, for whose negligence no action will lie against the city.

SUBJECTS TREATED IN THIS ARTICLE

Definition of Ministerial or Governmental Functions
Cases in Which City is Not Liable for Injuries
Exceptions Set Up by Some Courts
State Statute Valid Which Makes City Liable
City Officials Must Have State Statute Authority to Make Contracts with Other Municipalities
When Municipal Contracts Are Valid
State Law Controls the Liability of Municipality for Injuries
Limits of Liability for Injuries Defined

When City is Not Liable for Injuries

In order that readers may have opportunity to review actual circumstances, under which municipalities have been held not liable for injuries effected persons and property by Fire Department equipment, the leading cases of particular interest are as follows:

In Traction Company vs. Muncie, 133 N. E. 160, the municipality was held not liable for damages to a street car from collision with a fire truck. In Traction Company vs. Jennings, 123 N. E. 835, the municipality was held not liable for an injury to a passenger on a street car from negligence of the driver of the hose wagon which collided with the street car. In Bradley vs. Oskaloosa, 193 Iowa 1072, the municipality was held not liable for the death of a pedestrian struck by a fire engine returning from a fire. This case is unusually important, because the injury was effected while the Fire Department equipment was returning from a fire and, therefore, may have driven slowly and carefully.

In Mack vs. Charlotte Water Works, 181 N. C. 383, the city was held not liable for destruction of a house, because of the city's failure to furnish adequate supply of water for extinguishing the fire.

Some Courts Take Exceptions

In Barners vs. Walb, 262 S. W. 1081, the city was held not liable for damages sought for the death of a doctor who had called at the station house to examine a fireman, and fell through an unguarded hole in the second floor. However, in some states the higher courts have taken exceptions to this law and have held that a municipality cannot be relieved from liability for injuries negligently caused citizens as a result of defective or dangerous Fire Department real property or premises. In Kies vs. Erie, 135 Pa. 144, and Walters vs. Carthage, 36 S. D. 11, the court held a city liable for an injury to a child who was hit by an engine house door, which fell to the sidewalk, upon the contention that the city was performing a ministerial duty in maintaining the fire station, and was bound to make the place safe.

While, as before explained, a majority of state courts hold municipalities not liable for injuries to person and property caused by operation of a Fire Department, yet not all state courts accept the consequence of nonliability in case of injuries inflicted by automobiles used by the Fire Department. For illustration, in Raynor vs. Arcata, 65 P. (2d) 838, a city was held liable for injuries sustained by a citizen whose car was struck at a street intersection by the Fire Chief's car, being driven by the Chief, on his way to a fire outside the city limits.

As the result of the collision, the

citizen was bruised and suffered severe nervous shock, and at the trial, some two years after the accident, testified that he was still suffering from the effects of the accident with severe headaches and nervous instability, which made it impossible for him to perform as efficiently the work he had been previously doing.

The injured person contended that inasmuch as the fire was actually burning outside of the boundaries of the city, the Chief was not then in the performance of his duties and the city therefore was not liable. However, the alarm was sounded from a box within the city and the Chief testified that it was his duty to respond to a fire alarm started within the city. Notwithstanding this contention, the higher Court held the city liable, and said:

"It is, without doubt, the duty of the Fire Chief to be at hand to protect property within the city, even conceding that the fire was burning across the line and outside of the city limits."

According to this case if an alarm is sounded in the city, the fire department equipment is under the same legal duty and responsibility when going to a fire outside the city limits, as if it were going to a fire within the city limits.

Also, see Sacramento vs. Hunger, 79 Cal. App. 234, where the court said fire department equipment may not be driven with absolute indifference to others legitimately using such streets, or with reckless disregard of the lives and property of others, and the operators of such vehicles are not relieved from the duty of exercising the proper duty of care, when operating such vehicles over and along the streets of the city. The Court further said:

"As a matter of fact, inasmuch as such public automobiles are permitted to operate at an unlimited speed, a greater amount of care is required than in those cases where the speed of the motor vehicle is fixed by law."

State Statute Controls Liability

Various higher Courts have held that a state statute is valid which specifically or broadly states that municipalities shall be liable in damages for injuries to persons and property caused by officials or employees while performing governmental functions.

For example, in O'Brien, 232 N. Y. S. 454, a higher Court held that a law providing that every owner of a motor vehicle operated upon a public highway shall be liable for death or injury to person or property, resulting from the negligent operation of such motor vehicle in the possession of such owner or otherwise included municipalities. This Court held the law applicable to fire department equipment.

Irrespective of state laws, any municipal official or employee who effects injury to another's person or property may be held personally liable in damages. This law was upheld in numerous higher Courts, in which Fire Chiefs, and other officials, were held personally liable, where the testimony proved that negligence of the official caused the injury.

When Contracts are Invalid

Various higher Courts have held that if city officials contract, or make any agreement, with officials of another municipality, to supply Fire Department equipment for extinguishing fires, the municipality is not bound by a contract of this nature, unless the officials have valid authority to make such contracts.

Power or authority to make valid contracts may be granted by state laws, city charter provisions, or municipal ordinances authorized by state laws or constitutional provisions.

In fact a majority of state statutes provide that a municipal official cannot contract for a city unless specially authorized by law, or by an order of the City Council. Where the statute limits the power of the official, a contract binding on the city cannot be made by him, unless it is within the limitation.

Frequently, an implied power to bind the city is relied upon by officials, who endeavor to make contracts binding upon the city. However, if an implied power in an officer to bind the city by contract is relied on, it must be shown that such power is implied from some express authority conferred upon him, but, in the absence of proof of the express authority, the contract will not be binding on the city. The express authority can only be derived from state statutes or constitutional provisions.

Therefore, usually a municipal official or officer, assuming to bind the city by contract, must possess express authority for his power to represent the corporation in a contractual relation. A contract made without authority will not bind the municipality, unless, later, the officer receives such express authority and then ratifies the contract, or unless the unauthorized contract is ratified by some other board or officer having authority to make it, or unless, as often happens in the case of a contract made without authority in time of emergency, the subsequent conduct of the city authorities is held to constitute a ratification.

Obviously, however, these variations cannot often apply to contracts made by municipal officials to supply fire protection to property owners, or villages, situated outside the city limits.

Power of Governing Body to Contract

It is well established law that, unless otherwise specially provided by law and subject to such restrictions as are imposed by state statutes, the power to make municipal contracts resides in the Council, a Board of Trustees, or entire body, as the general governing body of the corporation.

Another important point of law is, that when making or authorizing a contract, the Council must act regularly as a board and at a regular meeting. In other words, the members individually have no power to bind the municipality. If the mode of exercising the power is restricted to certain methods, the power must be exercised in the prescribed method. Moreover, the power of a Council to contract in matters of official discretion must be exercised by the Council itself, and cannot be delegated to a member or committee thereof.

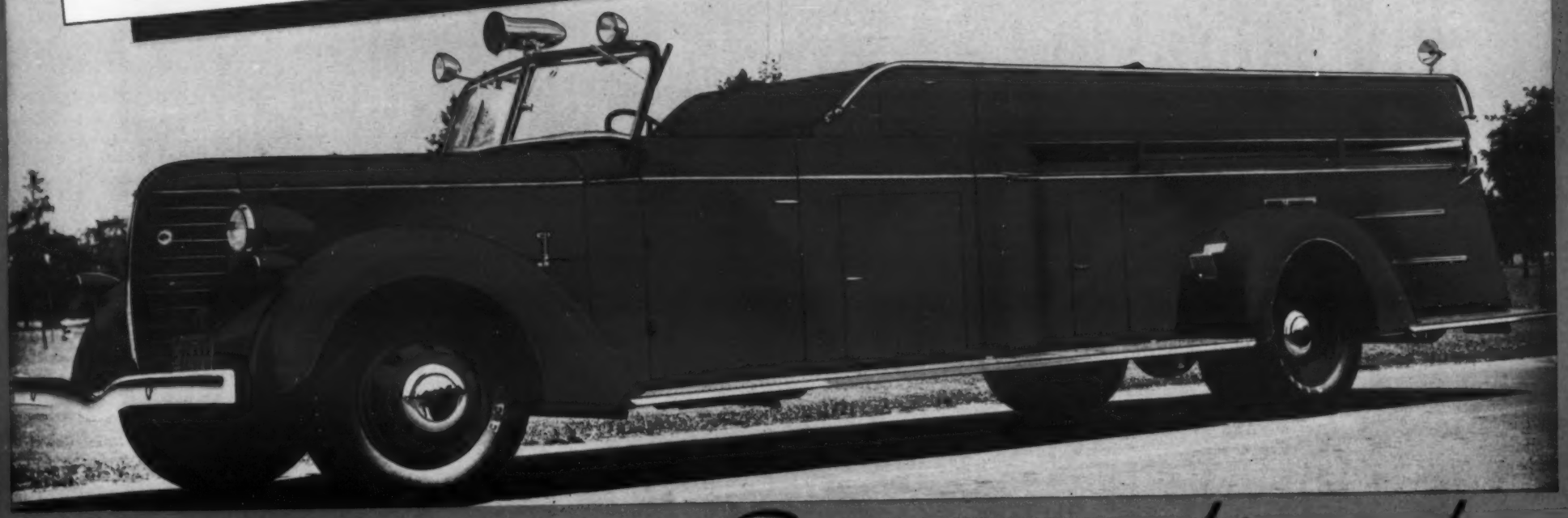
Still another important point of law is that a person, firm or other corporation municipality entering into a contract with a Municipal Council is bound to take notice of the powers of the Council, as conferred by the charter, and to inform himself whether the requisite preliminaries have been performed.

If the official or Council has no authority to make a contract, naturally he acts outside the scope of the employment and the city is in no sense responsible on the contract. Therefore, the city would not be liable for injuries effected by the Fire Department equipment, when going to a fire outside the city limits, if the officials had no authority to agree to assist in extinguishing fires in an adjoining village.

State Law Controls Liability

If a state law specifies that municipalities shall be liable for injuries effected by Fire Department equipment, the city cannot avoid liability by pleading the governmental function rule. See Maxwell vs. Miami, 87 Fla. 107, in which a Florida higher Court held a municipality liable for

Place YOUR Department HEAD *and* SHOULDERS *above Competition* with..



..the new Streamlined BUFFALO Better-Built FIRE APPARATUS

BUFFALO *Better-Built* FIRE APPARATUS

★ Every Fire Chief knows that the performance of his Department can be no better than its equipment. That's why there is such a rapidly growing demand for the new streamlined Buffalo Better-Built Fire Apparatus to replace obsolete fire trucks.

The last word in streamlined styling—bigger, roomier all steel cabs, wide vision windshields, easier steering—improved power brakes—all controls located for greatest convenience—guaranteed performance.

Write today for complete information and prices.

BUFFALO FIRE APPLIANCE CORP.
44 Central Avenue
Buffalo, N. Y.

the negligent operation of a fire truck, and other automobiles used in going to fires, notwithstanding the Court admits that operating Fire Department equipment is a governmental function. This Court said:

"The operation upon the public streets of an automobile as a part of the fire extinguishment equipment of a city, is not such an essentially or exclusively governmental function as to exempt the city from liability for injuries to persons lawfully using the streets, when such injuries are solely caused by the grossly negligent manner in which the automobile is driven at a high and dangerous rate of speed upon the streets on which persons are lawfully traveling on foot or in permissible vehicles. While the right of way should be given to the passage of fire-fighting equipment, when a destructive fire is or is supposed to be in progress, however, the right of persons lawfully upon the streets may not be violated by the reckless driving of fire-fighting equipment automobiles."

Liability Limits Defined

Some higher Courts have held that a municipality is not liable for injuries effected by Fire Department equipment going to a fire, but that it is duty bound to use the same degree of care as private individuals and firms to protect citizens from injury when coming from a fire.

For illustration, in Opocensky vs. So. Omaha, 101 Neb. 336, it was shown that an automobile maintained for the use of the Fire Department was being driven at an unlawful speed by a fireman who had been ordered by the Chief to test the machine. The city was held liable for an injury resulting from its unlawful operation.

North Carolina Firemen Convene

Clyde Hilderbrand, Canton, N. C., was elected President of the North Carolina Firemen's Association at the organization's business session of its fifty-second annual convention at Carolina Beach, August 7-10.

Other officers named were Vice-President, Donald E. Shuford, Hickory; Secretary, John L. Miller, Concord; Treasurer, A. B. Horney, High Point; and Statistician, R. A. Joyner, Farmville.

In retiring from office as President, Jerome B. Flora presented Hilderbrand with the association's official gavel and the James B. MacNeill Memorial Cup, presented in memory of a former President.

The election of officers was held following a memorial program at which the members of the association who died during the past year were honored.

The principal address of the final day's morning session was delivered by Mayor Thomas E. Cooper, of Wilmington, who said he would appear personally before the 1941 session of the North Carolina legislature to fight for legislation to provide pensions for firemen.

Mr. Cooper proposed financing the program by levying a tax of two per cent on gross premiums collected by out of state fire insurance companies on North Carolina business. Such a levy would replace a tax of one-half of one per cent now levied on gross premiums of all companies in the state, he said.

He contended the plan would permit retirement of firemen at half their regular salaries, and said:

"Firemen work indirectly for the fire insurance companies. They aid in keeping fire losses to a minimum, so the insurance companies should be glad to assist in such a pension fund. Their fire losses will decline."

Sherwood Brockwell of Raleigh, State Fire Marshal, was given unanimous endorsement for his work with fire college and drill schools by the 850 delegates to the convention at the first day's session.

Brockwell discussed the act passed by the last general assembly in regard to the formation of the state-wide volunteer fire department.

Jerome B. Flora, retiring President, Elizabeth City, presided at the sessions.

Mr. Brockwell in discussing the activities and achievements of the fire college conducted in Wilmington during the winter, said that North Carolina is strictly a pioneer in this field, conducting the first school of its kind to be held anywhere in the country. The delegates unanimously voted to empower Brockwell to continue his work with the college next year.

The bill passed during the last session of the legislature forming a state-wide volunteer organization, was discussed at length.

A variety of entertainment was provided the firemen, including a street dance, a ball, and swimming.

D. G. SPENCER

Gardiner, Me., Has New Pumper

Replacing a 750 gpm triple combination, purchased from the Stutz Fire Apparatus Company, of Indianapois, Ind., in 1922, the Gardiner, Maine, Fire Department received on June 24 a new American-LaFrance-Foamite Corporation 750 gpm triple combination.

The Stutz machine had done good work for a number of years, but for a year past, considerable trouble had been experienced of various kinds due mostly to the age of the apparatus. On March 23, 1939, in response to an alarm, before the truck had cleared the station yard an explosion occurred in the base of the engine which put the machine out of commission and beyond repair.

Gardiner found itself without a major pumping unit because of this accident, and arrangements were at once made with the adjoining town of Randolph to answer Gardiner alarms. Fortunately, but one major fire occurred during this time, and on May 18 a major conflagration was narrowly averted by the prompt action of the Gardiner department and quick response of neighboring departments.

At 6:20 p. m. on May 18, an alarm was sounded for fire in the center of the high value district, in an abandoned and condemned wooden stable which was in the process of demolition. It resulted from a drinking bout of five men, two of whom left the stable before the fire, the other three losing their lives in the blaze, which was believed caused by smoking. The fire required the combined forces of Gardiner, Randolph, Farmingdale, Hallowell and Augusta to control, because of the rapid spread on shingle roofs; the total damage was estimated at $10,000, of which $7,000 damage was due to shingle roofs on the City Hall and Central Fire Station.

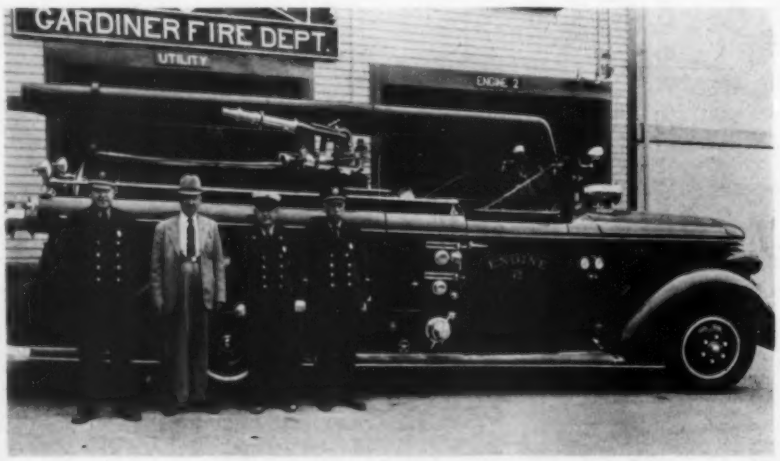
At a recent meeting of the City Council, Fire Chief Frank Lemar succeeded in having passed a delapidated building ordinance, but was unsuccessful in passing a shingle roof ordinance.

J. W. RANDLETTE.

Omaha Asks to Curb Gas Trucks

A resolution was prepared by Walter Korisko, Fire Commissioner, Omaha, Neb., calling for regulation of movements of gasoline trucks within the city.

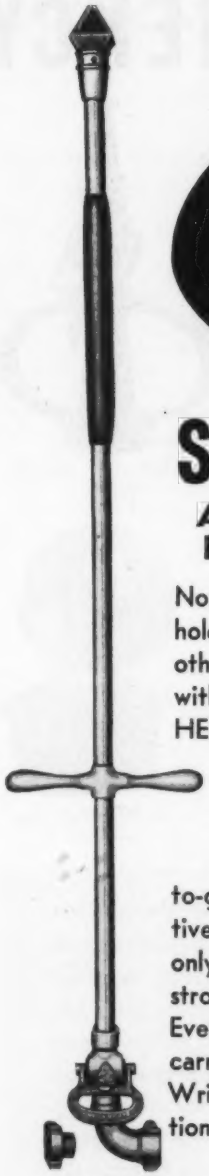
Chief Olsen called attention to the serious hazard of the gasoline transport trucks. Mr. Korisko favored limiting the quantity of inflammable material carried, to between six hundred and 1,500 gallons.



New Apparatus for Gardiner, Maine

Left to right, Basil Page, driver; Mayor Edwin P. Ladd, Chief Frank Lemar, Albert C. Hinckley, driver.

TWO ELKHART WORLD BEATERS



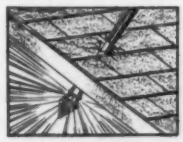
SPEARHEAD

A REAL PARTITION PIPE *for hard-to-get-at fires*

No longer do you have to chop holes in walls, roofs, floors and other inaccessible places . . . with the new Elkhart SPEARHEAD you make a hole with the nozzle itself. It's the feature tool that fire departments everywhere have long needed to reach hard-to-get-at fires quickly and effectively. It's light in weight—only 18 lbs.—yet tremendously strong. Overall length, 5 feet. Every piece of apparatus should carry a SPEARHEAD nozzle. Write Elkhart for demonstration.

Elkhart Special Construction Shut-off

Guaranteed for 3 Years



For Attics

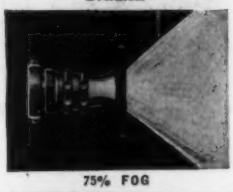
For Cellars

MYSTERY

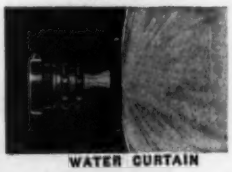
THE NOZZLE THAT WILL LICK ANY KIND OF FIRE

The MYSTERY is truly the all-purpose nozzle with its fog, solid stream, water curtain and shut-off in one unit.

STREAM



75% FOG



WATER CURTAIN

It is amazingly effective in extinguishing, quickly, oil and other flammable liquid fires and the last word in controlling attic or cellar fires.

Every fire department should have several MYSTERY Fog Nozzles . . . they lessen labor and danger — they lower property damage to an appreciable degree.

WRITE FOR CATALOG SHOWING COMPLETE ELKHART LINE

SEE OUR EXHIBIT AT THE SAN FRANCISCO CONVENTION

Elkhart is preparing an exhibit that should appeal to every fire chief interested in modern fire-fighting tools. Be sure to call on us.

ELKHART BRASS MANUFACTURING CO.

ELKHART *Manufacturers of Quality Fire Department Brass Goods Since 1902* **INDIANA**

FIRE-FIGHTING EFFICIENCY ...with BUCKEYE

Fig. 946—Fog Tip

Fig. 934—Single Hydrant Gate Valve

Buckeye Fire Fighting Equipment is designed from the Fireman's viewpoint, rather than the manufacturer's. It is a thoroughly practical line.

There is a complete line of shut-off nozzles. They *will not leak*. There is a size and type for *any* fire department.

Buckeye Exhaust Whistles sound above the heaviest traffic roar and clear the way for you.

ROTO-RAYS have three powerful revolving red lights that compel attention.

MOTO-RAY sweeps danger out of your way with the wide-sweeping motion of the red beam.

Send for complete details on all Buckeye Fire-Fighting Equipment.

BUCKEYE IRON & BRASS WORKS
324 East Third Street, Dayton, Ohio

BUCKEYE
Shut off Nozzles · Roto Rays · Whistles

Fig. 930—Junior Type Roto-Rays

Fig. 937 Heavy Duty Exhaust Whistle

Fig. 900—2½" Shut-Off Nozzle

Fig. 950—Moto-Ray

Cotton Jackets with two "RIGHT" Sides

A result of Republic's experience in the manufacture of Fire Hose

To dependably serve the cause of fire control, fire hose must have cotton jackets capable of withstanding hard treatment on both sides . . . high water pressures from within . . . wear and abuse as well as destructive formations of mildew and rot from without. All grades of Republic Fire Hose have jacket construction designed for extra strength and tested to prove capability of handling the highest pressures required in municipal and other types of service. In addition, cotton jackets treated with Republic's exclusive Provar Process are permanently protected against attacks of mildew, rot and other destructive pests. Specify Provar Process in your order for Republic Fire Hose. Republic Rubber Division of Lee Rubber and Tire Corp., Youngstown, O.

REPUBLIC RUBBER

SPECIFICATIONS FOR UNIFORMS AND HOW TO TEST CLOTH

New York Fire Department Draws Specifications for Uniform Fabric and How the Cloth is to be Tested

OF interest to other chiefs, are the specifications adopted by the New York Fire Department for fabrics used in the department uniforms, and the tests that are outlined to see that the cloth is up to regulation requirements.

The specifications follow:

Overcoating—30 Ounce

WOOL: Material to be full blood fleece wool shorn from live sheep and a grade not lower than 66/80, as determined by the official standards of the United States for Grades of Wool. It shall be free from vegetable matter, pulled or reworked wool, shoddy, flocks, kemp, waste and all other impurities.

COLOR: It shall match the shade and color of the standard sample on file in the Fire Department. It shall be stock dyed with pure vat indigo, bottomed with alizarine paste in a quantity not to exceed two per cent of the weight of the clean wool used. Burr or top dyeing is not permitted.

WEAVE: Double Plain.

WEIGHT: When desized it shall be not less than thirty ounces per linear yard, based on 56 inch width. A minus tolerance of 2½ per cent and any plus tolerance will be permitted.

WIDTH: It shall be not less than fifty-six inches exclusive of selvage, and guaranteed not to shrink over five per cent in conditioning for tailoring.

THREAD COUNT: It shall contain not less than 82 threads per inch in the warp and not less than 90 threads per inch in the filling.

FINISH: It shall have the same degree and character of finish as shown by the standard sample on file in the Fire Department. A tolerance for non fibrous, or added finishing material, of not more than one per cent, exclusive of the dye, will be permitted.

BREAKING STRENGTH: It shall be not less than eighty pounds in the warp and not less than 105 pounds in the filling by the grab method, except that no rejections will be made for strength if the sum of the warp and filling strengths equals or exceeds 185 pounds, provided neither warp nor filling is more than ten per cent under the above requirements.

ABRASION TEST: It shall be submitted to abrasion tests and compared with the standard sample before and after dry cleaning. It shall be required to show resistance properties to abrasion tests not lower in value than the standard sample.

The back of the cloth shall be permanently stamped with either the name or trade-mark of the manufacturer at intervals of ¼ yard at places other than the selvage in the length and staggered across the width at intervals of approximately twelve inches apart.

The following specifications are for:

Dress Cloth—20 Ounce

WOOL: Material to be full blood fleece-wool shorn from live sheep and a grade not lower than 66/80, as determined by the official standards of the United States for grades of wool. It shall be free from vegetable matter, pulled or reworked wool, shoddy, flocks, kemp, waste and all other impurities.

COLOR: It shall match the shade and color of the standard sample on file in the fire department. It shall be stock dyed with pure vat indigo, bottomed with alizarine paste in a quantity not to exceed two per cent of the weight of the clean wool used. Burr or top dyeing is not permitted.

WEAVE: 4 Harness Broken.

WEIGHT: When desized it shall be not less than 20 ounces based on 56-inch width. A minus tolerance of 2½ per cent and any plus tolerance will be permitted.

WIDTH: It shall be not less than fifty-six inches exclusive of selvage, and guaranteed not to shrink over five per cent in conditioning for tailoring.

THREAD COUNT: It shall contain not less than sixty-six threads per inch in the warp and not less than seventy threads per inch in the filling.

FINISH: It shall have the same degree and character of finish as shown by the standard sample on file in the Fire Department. A tolerance for non fibrous, or added finishing material, of not more than one per cent, exclusive of the dye, will be permitted.

BREAKING STRENGTH: It shall be not less than seventy pounds in the warp and not less than sixty-two pounds in the filling by the grab method, except that no rejections will be made for strength if the sum of the warp and filling strengths equals or exceeds 132 pounds, provided neither warp nor filling is more than ten per cent under the above requirements.

ABRASION TESTS: It shall be submitted to abrasion tests and compared with the standard sample before and after dry cleaning. It shall be required to show resistance properties to abrasion tests not lower in value than the standard sample.

The back of the cloth shall be permanently stamped with either the name or trade-mark of the manufacturer at intervals of ¼ yard at places other than the selvage in the length and staggered across the width at intervals of approximately twelve inches apart.

The following specifications are for:

Serge—14 Ounce

WOOL: Material to be full blood fleece wool shorn from live sheep and of a grade not lower than 64/70, as determined by the official standards of the United States for grades of wool. It shall be free from vegetable matter, pulled or reworked wool, shoddy, flocks, kemp, waste and all other impurities.

COLOR: It shall match the shade and color of the standard sample on file in the Fire Department. It shall be stock dyed with pure vat indigo, bottomed with alizarine paste in a quantity not to exceed two per cent of the weight of the clean wool used. Burr or top dyeing is not permitted.

WEAVE: 4 Harness Twill.

YARN: It shall be made from two-ply worsted yarn in both warp and filling.

WEIGHT: When desized it shall be not less than 14 ounces per linear yard, based on 59-inch width. A minus tolerance of 2½ per cent and a plus tolerance of ten per cent will be permitted.

WIDTH: It shall be not less than 59 inches exclusive of selvage and guaranteed not to shrink over five per cent in conditioning for taloring.

THREAD COUNT: It shall contain not less than seventy-two threads per inch in the warp and not less than seventy-two threads per inch in the filling.

FINISH: It shall have the same degree and character of finish as shown by the standard sample on file in the Fire Department. A tolerance for non fibrous, or added finishing material, of not more than one per cent, exclusive of the dye, will be permitted.

BREAKING STRENGTH: It shall be not less than ninety pounds in the warp and not less than eighty-two pounds in the filling by the grab method, except that no rejections will be made for strength if the sum of the warp and filling strengths equals or exceeds 172 pounds, provided neither warp nor filling is more than ten per cent under the above requirements.

ABRASION TEST: It shall be submitted to abrasion tests and compared with the standard sample before and after dry cleaning. It shall be required to show resistance properties to abrasion tests not lower in value than the standard sample.

The back of the cloth shall be permanently stamped with either the name or trade-mark of the manufacturer at intervals of ¼ yard at places other than the selvage in the length and staggered across the width at intervals of approximately twelve inches apart.

All fabrics submitted with bids are sent to three individual cloth testing laboratories to be tested as follows:

Method of Testing

FIRST: The standard samples shall be tested to set up a standard for the following: Color fastness to crocking, perspiration, dry-cleaning and pressing, weather conditions, also Fade-Ometer and for abrasion test.

It is not necessary to test the standard samples to determine the following points (as the Fire Department's specifications set up a standard for said points): quality

of wool; weave, yarn (two ply or single); weight; width; thread count; breaking strength; and shrinkage.

The test shall be conducted as follows and a separate report showing the result of each test shall be compiled.

1. Atmospheric Conditions: All physical tests are to be made under standard conditions. Standard conditions prevail in an atmosphere with a relative humidity of sixty-five per cent and a temperature of 70°-80° Fahrenheit.

2. Conditioning: All test samples are to be conditioned for a period of four hours before testing.

3. Width of Fabric: Shall be determined by laying the fabric on a flat surface, smoothing out any wrinkles or creases that may be present, and measuring across the cloth from selvage to selvage in a line perpendicular to the fabric edges. Measurements are to be taken to the nearest ½-inch. The average of five measurements made at different places in the cloth is to be taken as the width of the fabric.

4. Thread Count of Fabric: The thread count is to be determined by counting the actual number of threads in one inch of the fabric. Five counts in each the warp and filling directions, are to be made at different places in the cloth. The result of the five counts in each direction are averaged for the counts per inch of the warp and filling yarns.

All thread counts are to be made in areas at least six inches in from the fabric selvages.

5. Weight of Fabric: The weight of a fabric shall be determined by weighing one linear yard or smaller length and the weight computed in ounces or fractions thereof, based on the width of the cloth (exclusive of selvages) as set forth in specifications. Example: The weight of some fabrics is figured on a 56-inch basis, while others are figured on a 58-inch or a 59-inch basis (all exclusive of selvages).

6. Tensile Strength of Fabric: The tensile or breaking strength of a fabric shall be determined on a regulation cloth strength tester. Tests are to be made by the *Grab Method*. Specimens cut 6-inch x 4-inch are clamped in the top and bottom jaws of the machine, set three inches back and pulled to rupture, using two-inch back jaws and one inch front jaws. The speed of the pulling jaws is twelve inches per minute. The samples are placed in the jaws symmetrically, care being taken that the same set of threads are gripped in both the top and bottom jaws of the machine.

The average results of five tests made in each direction of the fabric will be breaking strength of the cloth in both the warp and filling directions. Only good clean breaks are to be recorded. Breaks occurring at the jaws or showing a low result far below the average figure for the set of samples due to faulty operation and handling are to be disregarded and another specimen broken.

In cutting the fabric sets (five 6- x 4-inch specimens in each direction) no two samples shall be cut from the same system of threads.

Color Fastness Tests

A. To Crocking, dry and wet.

This test is to be made by rubbing the fabric vigorously, ten times over a length of approximately four inches on unsized white cotton cloth. The index finger is used in conducting this test which is to be made on both dry and wet fabric specimen of the sample submitted. There being a standard sample for test comparison, the grading standards are to be reported as follows:

Good—Samples which do not show a greater degree of crocking than the Standard Sample.

Fair—Samples which show a slightly greater degree of crocking than the Standard Sample.

Poor—Samples which show a greater degree of crocking than those listed as "fair."

To Perspiration: Tests are to be made by saturating two sample specimens, each measuring 2-inch x 4-inch with chemical solutions containing the ingredients of normal body perspiration:

One of the fabric specimens is saturated with

1. Acid perspiration solution.

Formula—10 grams sodium chloride
1 gram lactic acid U. S. P. 85 per cent.
1 gram Disodium orthophosphate, anhydrous made up to 1 liter with water.

The other specimen is saturated with

2. Alkaline perspiration solution.

Formula—10 grams sodium chloride
4 grams ammonium carbonate U. S. P.
1 gram disodium orthophosphate, anhydrous made up to 1 liter with water.

The above specimens to be rolled individually in prices of undyed cotton-wool union cloth of corresponding 2-inch x 4-inch size wet out with the solutions. The rolled specimens inserted in glass testing tubes (size 15 mm by 150 mm) for about two-thirds of their length, leaving a portion projecting from the tubes. The tubes are placed in glass dessicators approximately 4-inch in diameter with 300 M I of a seventy per cent solution of sulphuric acid in the bottom of each. After drying the specimens are unrolled and examined for fading, discoloration and staining tendencies.

The samples shall be graded as follows:

Good—Samples which do not show a greater degree of change than that shown by the Standard Sample.

Fair—Samples which show a slightly greater degree of change than that shown by the Standard Sample.

Poor—Samples which show a greater degree of change than those listed as "Fair."

To Dry Cleaning and Pressing

A specimen measuring approximately 4- x 4-inch is placed together with a small sample of white cotton-wool fabric in a one pint preserve jar containing 200 M I of benzine soap and Savasol (dry solvent). The soap and dry solvent bath contains ⅔ per cent of a suitable benzine soap made up to 200 M I with Savasol. The jar is agitated for five minutes in a Launder-Ometer or a similar type machine, which consists of horizontal shaft carrying several jar receptacles in a rotary motion at forty to fifty revolutions per minute. The soap and solvent are then poured off and replaced with 200 M I of clear Savasol. The jar is again agitated for five minutes and the solvent drained off. The sample is removed, extracted, dried in the air and then steamed and pressed on the board of a regular garment press.

The sample is placed under observation for changes in color or alteration of its finished appearance in comparison with standard samples. The following scale is to be used in grading samples for color fastness properties:

Good—Samples which do not show a greater degree of change than the Standard Sample.

Fair—Samples which show a slightly greater degree of change than that shown by the Standard Sample.

Poor—Samples which show a greater degree of change than those listed as "Fair."

To Weather Conditions

Weather tests are to be made by exposing a sample of fabric on a roof or other unprotected place for a period of 20 days. Color comparisons are to be made under the same scale as is used in rating colors for fastness to dry cleaning and pressing.

To Fade-Ometer

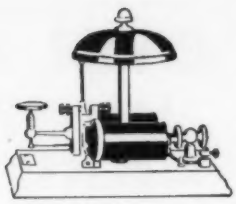
Light tests are to be made by exposing

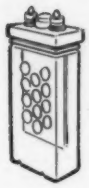
New Pumper Delivered to Damariscotta, Me.

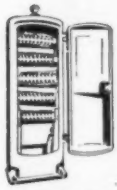
A 500-gallon pumper, built by the Sealand Corp., Bridgeport, Conn., was delivered to Damariscotta, Me. The unit carries 1,000 feet of 2½-inch hose and 800 feet of 1½-inch hose. M. S. Clark is Chief of the department.

FIRE ALARM BOXES

HORNS


DESK TAPS

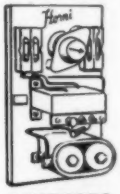

BATTERIES


TERMINAL BOXES

WIRING SUPPLIES

HORNI COMPOSITROL

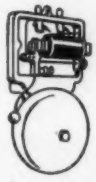
ELECTRO-MECHANICALS



RECTIFIERS

TRAFFIC CONTROL

INTERIOR TELEPHONES

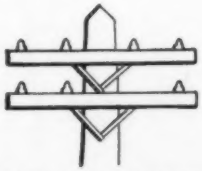

WALL TAPS

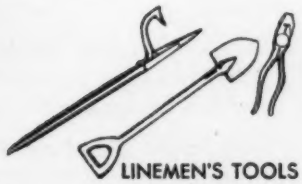
FOR QUICK SERVICE ON

EVERYTHING ELECTRICAL FOR FIRE DEPT. NEEDS!

TAPE

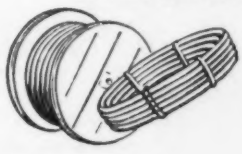
VENTILATION


POLES AND CROSSARMS

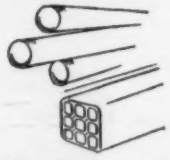

LINEMEN'S TOOLS

OFFICES IN 83 PRINCIPAL CITIES · EXEC. OFF. GRAYBAR BLDG. NEW YORK

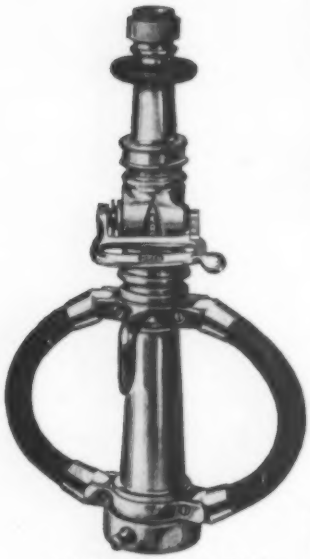
FLOODLIGHTING


CABLES AND WIRES

FUSES


UNDERGROUND MATERIALS

LAMPS AND LIGHTING EQUIPMENT



Ball Type Nozzle and Little Giant Playpipe

OVER 20 YEARS

Leaders of Quality and Service

AKRON BRASS

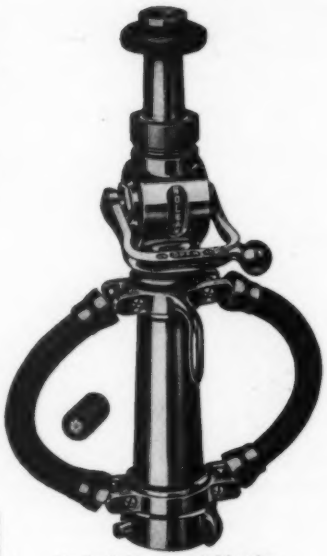
See Our Display at the Convention by
Western Fire Equipment Co.

●

New England Distributor
Boston Coupling Co.

Send for Catalog and Circulars

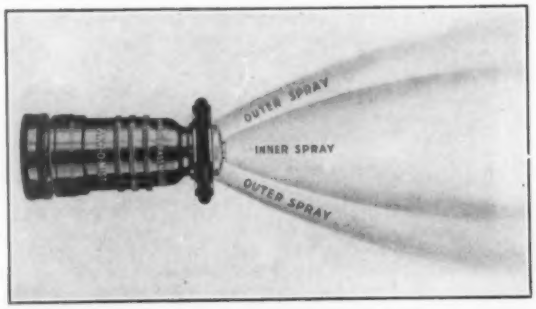
AKRON BRASS MFG. COMPANY, INC
WOOSTER, OHIO

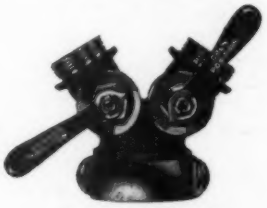


No Leak Nozzle and Playpipe

Rocker Lug Coupling

Akr-O-Mist Nozzle





Akron Gated Siamese

—BI-LATERAL FIRE HOSE—

again selected by

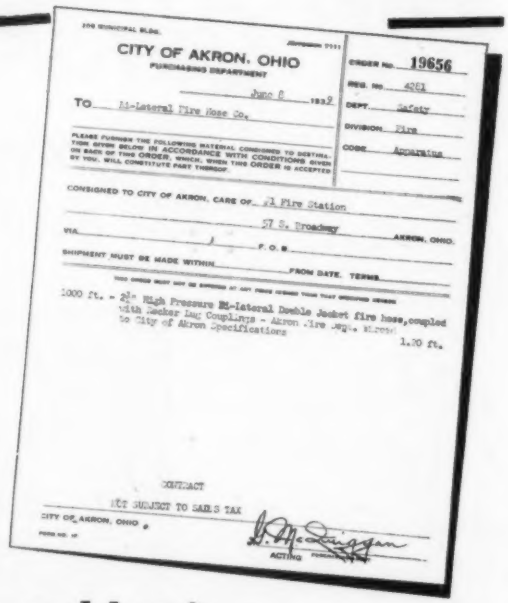
AKRON, OHIO
THE RUBBER CITY OF THE WORLD

Whose officials can obtain the real facts about fire hose construction and manufacture. ***They know the purchase of cheap hose is poor economy*** and can see how Bi-Lateral Fire Hose is made.

Bi-Lateral jackets combine structural strength to withstand high pressure with maximum pliability and the linings are the best ever put in fire hose.

Investigate Bi-Lateral Fire Hose with the new drop-forged couplings, when in the market.

BI-LATERAL FIRE HOSE COMPANY
20 N. WACKER DRIVE - - CHICAGO, ILL.



CITY OF AKRON, OHIO
PURCHASING DEPARTMENT

ORDER No. 19656
REQ. NO. 4263
DEPT. Safety
DIVISION Fire
CODE Appratus

June 8 1932

TO Bi-Lateral Fire Hose Co.

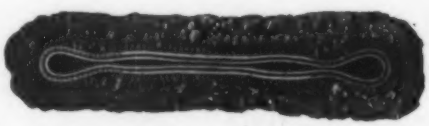
PLEASE FURNISH THE FOLLOWING MATERIAL CONSIGNED TO DESTINATION GIVEN BELOW IN ACCORDANCE WITH CONDITIONS GIVEN ON BACK OF THIS ORDER, WHICH, WHEN THIS ORDER IS ACCEPTED BY YOU, WILL CONSTITUTE PART THEREOF

CONSIGNED TO CITY OF AKRON, CARE OF #3 Fire Station
57 S. Broadway
VIA AKRON, OHIO.
F. O. B.
SHIPMENT MUST BE MADE WITHIN FROM DATE. TERMS

1000 ft. - 2½" High Pressure Bi-Lateral Double Jacket fire hose, coupled with Rocker Lug Couplings - Akron Fire Apparatus Co. to City of Akron Specifications 1.70 ft.

CONTRACT
NOT SUBJECT TO SALES TAX
CITY OF AKRON, OHIO
ACTING

—and here's the order!



specimens of the fabric for 40 hours on a Fade-Ometer. The apparatus to consist of a violet carbon arc light suspended within a hood provided with proper ventilation means. The effect is to produce by radiation an accelerated test to approximate as nearly as possible the conditions of atmosphere under an exposure to midday summer sunlight.

Specimens are placed on the inner wall of the hood or are suspended 10 inches from the glass enclosed arc, which operates on a current of approximately 13 amperes and 140 volts at the arc. The conditions around the lamp are so regulated that the temperature will not exceed 149° Fahrenheit (65° C.). Upon completion of the test, the sample is removed from the hood and allowed to cool for two hours before the color is graded. The exposed area which measures approximately 2- x 1½-inch is then compared with adjacent unexposed areas for determination of the color fastness properties of the fabric to light. The sample is then rated under the same scale as for dry cleaning and weather tests in grading the fabric for color fastness to light.

8. Shrinking in Sponging: This test is to be determined by marking off an area twenty inches square on the fabric, using an indelible ink or other suitable means. A margin of at least two inches is to be left between the marks and the cloth edges. Marks are to be made in three places on the cloth sample in each direction (warp and filling) with the sample lying flat and smooth, under no tension, so that it will be possible to record measurements for an average shrinkage result.

The fabric is immersed in tap water at 70-80 degrees Fahrenheit temperature until thoroughly saturated. The cloth is removed from the water, squeezed by hand or extracted (wringing or passing through squeeze rolls not being permissible as distortion of the material may result) and then spread out flat to dry on a wire screen or flat surface at room temperature. After drying, the fabric is pressed on a buck board with a steam heated ironing head (regular garment press).

Measurements are taken after the fabric has been allowed to cool for a period of two hours and the shrinkage calculated as per cent over the original marked sample dimensions in both the warp and filling directions.

9. Abrasion Tests of Fabrics: Abrasion tests to determine the surface resistance of a fabric to friction shall be made. Two specimens of cloth cut from the same piece shall be abraded against each other on a suitable machine, on which there are devices to maintain regulated conditions of tension and pressure on the fabric at all times during the stages of the test.

First: Four samples cut from each standard sample shall be subjected to four abrasion tests as follows:

A. One test warp-wise—before dry cleaning

B. One test filling-wise—before dry cleaning

C. One test warp-wise—after dry cleaning

D. One test filling-wise—after dry cleaning

Observations shall be made while testing each type of standard sample to determine the degree of wear and discoloration at two different periods during the test, and a record made of the number of double strokes then registered by the counter. A notation shall be made in reference to the condition of the sample regarding wear and discoloration, at each period of observation.

The test of each standard sample shall be continued until the samples show noticeable wear. When this condition occurs, the test shall be considered completed and the number of double strokes registered by the counter shall be established as the standard test for all other samples of the same weight and character.

Second: All samples submitted with proposals shall be subjected to the four tests as outlined above, and each sample shall be given the same number of double strokes as set up as standard for that particular weight and character of cloth. Two observations shall be made during the test to determine the degree of wear and discoloration made during the test, to determine the degree of wear and discoloration shown at the same periods as established for the standard sample.

Third: When all samples have been subjected to the abrasion tests, a comparison shall be made with the standard samples (which have been subjected to the abrasion tests) to determine the relative wearing qualities of each fabric, and the fabrics shall be rated in three grades, as follows:

1st: Equal to standard samples in wearing qualities, and showing no greater amount of discoloration than standard sample.

2nd: Not equal to first grade in wearing qualities, or showing a greater amount of discoloration than first grade.

3rd: Not equal to second grade in wearing qualities or showing a greater amount of discoloration than second grade.

Fourth: In making the abrasion tests, care shall be taken to grip the same threads of each specimen in both pair of jaws; also, that the following conditions shall prevail for all samples of a like weight and character, i. e.:

Atmosphere: Temperature and humidity shall be the same for each type fabric.

Width: Width of test samples shall be the same.

Tension: The tension under which the samples are put into the machine shall be the same.

Pressure: The pressure or weight to which the samples are subjected shall be the same.

Nap: The nap on samples that are tested against each other shall run in the same direction.

Connecticut Firemen Meet

Chief Cornelius J. Carrigan of the Terryville, Conn., Fire Department, was unanimously elected President of the Connecticut State Firemen's Association at the fifty-sixth annual convention held at Pleasure Beach, Bridgeport, on August 18 and 19. Chief Carrigan has been a member of the Executive Board of the Association for several years past and has been Chief of Terryville Department for many years.

Lieut. Charles H. Brundage, New Haven, was elected Vice-President.

David W. Harford, South Norwalk, and Deputy Chief Michael T. Souney, New Britain, were re-elected Secretary and Treasurer, respectively. Rev. Michael J. Thompson of Niantic was again honored with appointment as State Chaplain.

John E. Graham, Waterbury, President during the past year, opened the convention and introduced Mayor Jasper McLevy who welcomed the delegates.

Chief C. J. Carrigan

Other speakers were Judge Francis A. Palloti, Attorney General, Connecticut; State Senators Albert L. Coles, Bridgeport, and George T. Culhane, Waterbury, and Chief Thomas F. Burns, Bridgeport. An invitation from the Danbury Fire Department to hold the 1940 convention in that city was accepted.

The outstanding feature in connection with the convention was the 3½-mile long firemen's parade which was held on August 19, with over 5,000 firemen in the line of march, including companies from North Merrick, Dover Plains and Beacon, N. Y. Judges awarded prizes for various events in the parade. Thomas F. Magner.

Chief Brock, Southboro, Mass., Resigns

Patrick Brock resigned as Chief in Southboro, Mass. to accept a position in the State Forestry Department. Captain John Boland was appointed Chief.

Hours Reduced in Ohio

The hours of firemen in Ohio have been reduced from the old average of eighty-four hours to an average seventy-two-hour week. This permits an off-time of twenty-four hours every fourteen days.

Ex-Chief Sullivan, Fall River, Dead

Jeremiah F. Sullivan, Chief of Fall River, Mass., Fire Department from 1922 to 1937, when he retired, died at the age of seventy-three. He had served the department for nearly fifty years.

Chief Sullivan was commended by city officials for the way he fought and supervised the great Fall River fire in 1928.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

LEAKS FROM UNDERGROUND GASOLINE TANKS

SOIL is porous. In between the various particles there are spaces which may be occupied by moisture or air. These spaces make fine underground reservoirs for the storage of gas which may have escaped from leaky gasoline tanks.

The gas travels through the soil and may enter a basement or point of lower elevation at a point many feet from the original leak. When this gas is mixed with the proper amount of air, it becomes a most dangerous explosive.

The experience of Chiefs in this matter is contained in the following discussion, which is a continuation of the one that appeared in the previous issue. In the box on the following page is the problem that will be presented in the next issue.

Discussion of the Question

A. Brown, Chief, Birmingham, Ala.: We had a situation about six months ago, where gas was discovered leaking from an underground tank.

A wholesale drug company had two pipes under their building, which drained water from under the building to a sump in the basement, from which it was pumped to the sewer by an electric pump. One morning the sump was found to have a considerable amount of ethyl gas in it.

There was one filling station about a block away and two across the street from the store. We had all three checked by digging to the tanks and found no leaks. However, at the station a block away, we found a tank which the company had discontinued, due to the fact they had noticed a loss of gas from the tank.

Meanwhile we kept close watch on the sump and found that the gas had stopped coming in.

My theory of this was that under the building was a pocket and gas from the tank, the use of which was discontinued, seeped into the pocket. As there was no air, the gas did not evaporate, but lay in the pocket. The day before the gas was found we had a heavy rain and I believe the water entering the pocket forced the gas out and it drained into the sump.

As we have had no recurrence of this condition, I believe my theory is correct.

Robert Jones, Chief, Chattanooga, Tenn.: Several years ago we had trouble with gasoline seeping into the basement of one of our hotels. Upon investigation we found that a leak in a tank in a nearby dry cleaning establishment was causing the trouble. At that time the present city ordinance had not been drawn up.

Our new city ordinance requires that tanks be set in concrete according to specifications to comply with the Ordinance.

Just recently we have discovered several manholes with oil coverage. A meeting was held in the City Electrician's Office and representatives from the various oil companies met with city officials. The oil companies represented claimed to have made recent tests of the underground storage tanks both for gasoline, oil and refuse oil, but made new tests. The City Engineering Department took samples of fluid in the sewer and storm mains to determine if they had oil in them. The Fire Department made a thorough inspection of all places within an area of two blocks, to determine if any place was dumping the refuse oil into the sewer or into trench drains. The source of the leak has as yet not been discovered.

Alex W. Dotson, Chief, Elkhart, Ind.: We have never found evidence of gasoline from leaking underground storage tanks finding its way into basements of nearby buildings.

All tanks are inspected before installation is made and all must carry the Underwriters' seal and must be installed under the regulations of the State Fire Marshal.

Thomas R. Hartnett, Chief, Racine, Wis.: We have in two instances found evidence of gasoline leaking from underground tanks seeping into neighboring buildings. The tanks were dug up and replaced in both cases. We inspect all bulk and filling stations every six months.

James Louis McLane, Chief, Charleston, West Va.: A short time ago we received a call from the occupants of a building, complaining that the place was filled with gas fumes. After an investigation we determined that they were gasoline fumes. This condition continued for weeks with calls about twice a week to the effect that the store and basement were filled with fumes. With the help of the Pure Oil Company and the United Fuel Gas Company, we found a small leak in the union leading to the tank under the cement in a narrow space between two buildings. This was a slow drip over a long period of time, but wasn't noticeable in the pressure test, or by the owner. These fumes were seeping through an old stone wall basement, spreading through the upper floor. I had the tank removed and there hasn't been any trouble since.

We have the gasoline company put a pressure test on the tank if a leak is suspected.

We only inspect or test for leaks in storage tanks, if a request has been received.

W. R. Price, Chief, Springfield, Mo.: We have never encountered a situation where gasoline was found leaking into a neighboring building from an underground storage tank.

We do not allow underground tanks to be within 100 feet of any basement. Large tanks cannot be installed in business districts.

W. P. Weeks, Chief, Battle Creek, Mich.: All gasoline storage tanks are installed under the supervision of the State Fire Marshal, in accordance with the state laws governing same.

Edward A. McHugh, Chief, Louisville, Ky.: We have not experienced any underground leakage.

The Fire Department makes an inspection of all tanks used for storing gasoline before they are installed. We do not make any further inspection.

The 1939 Flammable Liquids Ordinance (N. F. P. A.) is now before the city aldermen for passage.

J. Ludie Croom, Chief, Wilmington, N. C.: We have never had any experience with leaky underground gasoline storage tanks.

Tests are made daily by filling station operators, or anyone that has an underground tank on the premises.

H. R. Chase, Chief, Miami, Fla.: As we do not have any cellars in Miami, we are not faced with the problem of gasoline from underground storage

HERE THE PROBLEM

Have you, in your city, encountered a situation where gasoline was leaking from underground tanks and finding its way into neighboring buildings.

What methods do you employ to prevent such occurrence?

Do you inspect (or test for leakage) underground gasoline tanks?

In what manner is such inspection or test made? And how often?

Have any leaky tanks been found?

Announcing

M·S·A's ALL-SERVICE GAS MASK

WITH THE NEW ALL-VISION FACEPIECE

U. S. Bureau of Mines Approved!

NEW COMFORT!

GREATER VISION!

FOG-PROOF CONSTRUCTION!

LIGHT WEIGHT!

INTERCHANGEABLE LENS!

At the New Reduced Price of

$35.00

Get the full story of this remarkable new facepiece—now standard on all M.S.A. All-Service Gas Masks. Larger scientifically proportioned lenses, with built-in fog-proof construction, shatter-proof extra clear Triplex glass, minimum dead air space, perfect gas-tight fit, are but a few of the important features.

Write today for a demonstration of the new M.S.A. All-Vision Facepiece, which combines new comfort, new safety, new light weight at the new low price!

MINE SAFETY APPLIANCES COMPANY

BRADDOCK, THOMAS & MEADE STS., PITTSBURGH, PA.

DISTRICT REPRESENTATIVES IN PRINCIPAL CITIES

M. S. A. Safety Equipment Includes Breathing Apparatus . . . Inhalators . . . Comfo Respirators . . . Masks of all Types . . . Gas Indicators . . . Gas Detectors . . . Safety Goggles . . . Protective Hats and Caps . . . Edison Electric Cap Lamps . . . Safety Belts . . . Safety Clothing . . . First Aid Equipment. Descriptive Bulletins will be sent on request.

LOUDER
ECONOMICAL
DEPENDABLE

H.O.R. MECHANICAL SIRENS

are installed in thirty Ford "Mercury" chiefs' cars recently supplied to the City of New York Fire Department

. . . . and this serves as further proof of the dependable performance of the H.O.R. No batteries, no troublesome wiring — rigidly mounted on the engine block, they operate through direct-connection to the fan belt. Why don't *you* modernize with H.O.R. *Mechanical Sirens?*

H. O. R. CO., 10 Broad Street, Stapleton, Staten Island, N. Y.

THE NEW PEERLESS HOSE CLAMP

TYPE "E"

The NEW Peerless Hose Clamp was **OFFICIALLY** demonstrated at the International Fire Chiefs Convention at **Toronto.** Three tests on a line from a pumper carrying 175, 200, and 225 pounds pressure. The performance was perfect. Witnessed by five hundred chiefs.

In **OKLAHOMA CITY** and **NEW ORLEANS,** in the Exhibit Halls 350 to 400 pounds hydraulic water pressure was held by two clamps, day and night for the entire four days of the conventions. All chiefs attending observed these tests.

USE THE NEW PEERLESS—SAVE TIME—MEN
—EFFORT MAKING CHANGES— LESS MEN NEEDED— LESS TIME REQUIRED

HANDLE LINES EMPTY— LESS EFFORT CARRYING LINES UP LADDERS—STAIRWAYS—FIRE ESCAPES—

APPLY CLAMP ON FLAT HOSE— CHECK WATER IN FRONT OF FIRE OR AT FOOT OF LADDER— NO TIME LOST WAITING FOR WATER

Improved Features

Automatic gravity lock.
Upper jaw ⅛ inch thicker.
Single rivet through links.
Clearance for foot of operator.
Spiked foot ends.
Channeled lever.

SPECIFY the NEW PEERLESS on NEW MOTORS

Patented U. S. and Canada — Made by

KELLAM MANUFACTURING COMPANY, BOX 729, ATLANTA, GA.

tanks seeping into a neighboring building.

Ernest Bechert, Chief, West New York, N. J.: When gasoline is found leaking from underground tanks into neighboring buildings, we refer the matter to the respective oil companies, which make an air test of the tank, by applying fifteen pounds pressure.

We do not inspect or test for leakage, unless a complaint has been received.

John A. Fisher, Chief, Duluth, Minn.: A 500-gallon tank from a filling station sprung a leak and so much gasoline flowed into the adjacent basement that it was necessary to tear the old building down, resulting in a law suit (Lindgren vs. Pine Oil Company). There was no fire, however.

We enforce the Fire Code with regard to underground storage tanks. The Underwriters standards of installation were adoted in 1933.

William J. Mohr, Chief, Santa Monica, Cal.: We have never experienced the situation where gasoline was leaking from underground tanks and finding its way into neighboring buildings.

Storage tanks for 10 to 1,000 gallons of gasoline are buried four feet in the ground and are of 12 gauge. Tanks of from 10,000 to 25,000 gallons are buried six feet in the ground and are one quarter steel.

We do not inspect or test for leakage. Leaks can often be found by observing the ground near the tank. The ground will be damp.

Gustav Anselm, Chief, Wyandotte, Mich.: We have never had an experience with leaky gasoline storage tanks and therefore do not make any inspections.

Chas. DeVleeschower, Chief, South Bend, Ind.: We make no tests or inspections, as we have found very few leaky tanks.

P. C. Pifer, Chief, Bakersfield, Cal.: We have not found any leaky tanks, but have found leaky piping.

At the time of installation we test the tanks for leakage. We do not do it at any other time.

Ira T. Jones, Chief, Bellingham, Wash.: We have not had any experience with gasoline leaking from underground tanks and finding its way into neighboring buildings.

When a tank is installed, we see that the proper gauge tank is used and that there is four feet of earth on all sides of the tank.

Thomas J. Hardwick, Chief, Kansas City, Mo.: Gasoline tanks are inspected by engineers, using the air test system, when the installation is made. The regulations of the National Board of Fire Underwriters are strictly enforced.

Carl J. Kiessling, Chief, Worcester, Mass.: A tank containing gasoline, if within ten feet of a building having a cellar or basement, shall be placed below the level of the floor of such cellar or basement.

Gasoline in excess of 65 gallons, for use in connection with a garage, shall be stored in underground steel tanks, the top of the tank to be not less than two feet below surface of the ground; or if located within a garage, not less than two feet below the lowest floor level.

The License Board, of which the Chief of the Fire Department is a member, inspects all locations for gasoline tanks and requires reinforced concrete to be placed over the tank.

A Fire Department inspector makes inspections of installations of tanks.

The first two designations above are state law in Massachusetts. The second two are local provisions and rules.

Filler and vent pipes are installed according to state law.

W. P. Payne, Chief, Spokane, Wash.: When tanks are installed they should be inspected for all defects and also after they are installed. All pipe lines should have a perfect inspection. Above all, the tanks should be installed by responsible parties and made by responsible concerns.

C. M. Johnson, Chief, Knoxville, Tenn.: We have found three instances where tanks were found to be leaking.

In one instance, on an old installation, the tank was under a building. This was ordered moved from the building and replaced with a new tank outside the building. In all cases, tanks were ordered to be replaced with new tanks.

Since 1928 the Fire Prevention Bureau has had complete charge of all gasoline installations. A very thorough supervision is employed on all installations and tanks are installed in accordance with suggestions of the National Board of Fire Underwriters.

The Fire Prevention Bureau makes routine inspections and checks for leaking pumps, tanks, etc.

These tests (where it is deemed necessary) are made by air and also by the pin test. The pin test is made by using measuring scale and placing pin at the top of the gasoline level. The tank is then placed under air pressure for 24 hours and checked again to determine if any gasoline has leaked out.

Inspections are made approximately four times a year.

Walter F. Israel, Chief, Detroit, Mich.: We have had instances where gasoline from underground tanks has seeped into neighboring buildings, public utility manholes and public sewers.

We test tanks with static head of gasoline or air pressure. The most effective way is to fill tanks with water and let them stand over night. Most owners, however, object to this method.

Tests are made when leaks are suspected. We use an earth auger. Holes are bored every ten feet around the suspected gas station.

Hardly a month goes by without at least one leak, and in many cases numerous leaks have been discovered during the course of the month.

Zephirin F. Dronin, Chief, Lewiston, Me.: We have never encountered a situation where gasoline was leaking from underground tanks and finding its way into neighboring structures. I believer, however, that this hazard could be prevented by burying the tank so that the top is below any subsurface structure and 25 feet away from it.

We have never found any leaky tanks, but if such a problem were presented to me, I would first have the house or building evacuated, then the electricity and gas shut off and a piece of apparatus with a crew of men ready with foamite and a foamite generator in case something did happen while the leak was being repaired.

All underground gasoline tanks should be tested annually at ten pounds pressure, the pressure being maintained for 30 minutes. Many leaky tanks have been located by this procedure.

Brooks McClure, Chief, Huntington, West Va.: We have not had any trouble with gasoline from underground tanks finding its way into neighboring buildings.

Each filling station checks its tanks both morning and evening for leakage.

Our department does not make tests. The oil companies make an air test when required.

John F. Healy, Chief, Denver, Col.: We have had very little trouble with leaks in underground storage tanks. We have had only two in the past ten years, where the gasoline found its way into neighboring basements.

Our flammable liquids ordinance calls for the Underwriters' label on all gasoline storage tanks and pumps, and requires that all tanks be buried in conformity with the Underwriters' requirements. In congested districts, the size of the tank is strictly limited.

We issue permits for the installation of all tanks and pumps and make a thorough inspection before the equipment is put into service. We do not make tests for leakage thereafter. It has been our experience that the daily check-up by the station attendant will reveal tank leakage before serious results occur.

C. J. Henry, Chief, Louisville, Ky.: We have never had a situation where gasoline has seeped into neighboring buildings from a leaking underground storage tank.

The Kentucky State law requires that all storage tanks be vacuum tested for leaks, before installation is made. It also requires that tanks be placed at a lower level than basements of neighboring property and that they be securely anchored. We advise that tanks be set and that sand be packed around them to absorb any small leakage. If any large leakage occurs, a new tank must be installed. We require that any unused tank be filled with water and inlet and outlets securely capped.

We do not make inspections.

We haven't found a leaky tank recently, but some time ago a large storage tank at a gasoline refining plant on the outskirts of the city was leaking underground into a small stream. This stream ran under a railway through a concrete culvert. Sparks from the railroad engine set vapors and gasoline on fire in this culvert. We used two high pressure water lines at ends of culvert to knock out

HERE IS THE PROBLEM FOR THE NEXT ISSUE

Should the Chief of a Volunteer Department be elected by members of the Department or appointed by the Town Council (or other municipal body or official)?

Which method do you consider the better, and why?

the fire. This fire was the first indication that the tank was leaking.

L. M. Funk, Fire Marshal, Dallas, Tex.: On several occasions we have found evidence of gasoline leaking from underground tanks entering neighboring basements, sanitary and storm sewers and power conduits.

Tests are made by the 24-hour stick measurement and by air pressure and gauge, though not at regular intervals.

When we find a leaking tank, we order it replaced and the condition is immediately cleared up.

Herman Steinfurth, Chief, Youngstown, Ohio: On numerous occasions gasoline has been found leaking from large tanks and has proved disastrous to neighboring structures and their inhabitants.

We now employ a detector, which is used by the local natural gas company. It indicates the presence of odor of natural gas or gasoline and operates very successfully.

Every tank where gas fumes are detected is drained at once of all liquid and then tightly capped. A pressure gauge is installed and ten pounds pressure applied and held for ten minutes. If a leak is shown, tanks are condemned for further use as gasoline storage.

Our local plumbing inspector takes over the testing of tanks reported to the Fire Department.

Many leaky tanks have been discovered by this method of inspection and the owners have been saved considerable loss of gas.

Robert Hoover, Chief, Kokomo, Ind.: We have found evidences of leaking gasoline tanks and have ordered the tank replaced. We do not make inspections.

F. T. Schlorf, Chief, Toledo, O.: We have had about 30 leaking underground gasoline tanks within the last two years. In some cases gasoline that has leaked from the tanks has found its way into the basement wall drain tiles and then into the city sewers. We have one instance, due to the spillage of gasoline at a bulk gasoline loading dock, where gasoline fumes were found in a basement wall, about 150 feet from the loading dock. This condition has been corrected.

At present we take no preventive methods to prevent such leaks, but we have a gasoline regulation ordinance before the Council at this time.

When a leak is suspected, or fumes found in the vicinity of the tanks, we use a four-inch auger, with a sectional 20-foot handle. This enables us to take a soil test wherever the ground is saturated. This method has proven very successful. We also have a Mine Safety Appliance Explosion Tester. This instrument has been successfully used on many occasions. After the gasoline ordinance is passed, it will be the duty of the Fire Inspection Bureau to make a test once a year of all tanks in the city.

As the city of Toledo has more underground and upright gasoline tanks than any other city of the same size, we feel that we have had a very good record so far, because we have not had a fire loss from any leaking underground tanks. This record is due to the two instruments we use to detect leaks.

S. D. O'Conor, Chief, Beaumont, Tex.: We have not yet encountered a situation where gasoline has found its way into neighboring buildings from leaking tanks.

The Fire Marshall inspects all tanks before they are put underground and so far no trouble has been encountered.

Most of the testing is done by the owner of the tank. He can tell by the amount of water in his tank if there is a leak or not. When the tank is taken out for any reason at all, it has to be inspected by the Fire Marshal before it can be used again.

Leaky tanks have been found in rare cases but the loss from them has been very small.

William J. Lutz, Chief, Wilmington, Del.: We have never seen evidence of gasoline from leaking storage tanks finding its way into neighboring buildings.

Tanks must be buried ten feet from any excavation or property line and must stand a test of five pounds. All tanks are inspected when installed. Inspection would embody coloring various tanks, if there were a battery of them, to determine which tank was leaking.

The City Ordinance gives supervision of all installations of tanks and a permit must be secured before any work can be started.

The Building Inspector has supervision outside of the building line and the Fire Marshal of the Bureau of Fire inspects all the installed tanks of filling stations, oil burners, etc.

J. P. McCosker, Chief, Bangor, Me.: We have on one occasion encountered a situation where gasoline was found seeping into the basement of a building. One of our down town bakeries had just such an underground tank. The tank leaked and the gasoline seeped through the ground across a fairly wide road into the basement of one of our Main Street buildings. The owner of the building called me in to investigate the gasoline, which was coming up through the sewer vent in his basement. (It looked as though he had struck oil.) We had to trace back each store on the street that had gasoline tanks to find out where the gasoline was coming from. We finally located the leaking tank at the bakery. The bakery immediately removed the tank from the ground.

We do not employ any methods to prevent such occurences. It seems to us that the owners should know if there was a leakage in their tanks. It would seem poor business if they did not keep some check on the gasoline properly used or delivered. This would, of course, be no excuse for the Fire Department not to inspect them, but where they are underground and properly piped up, we inspect them only as a fire hazard.

Luther P. Willis, Chief, Pueblo. Col.: We have never to our knowledge had a leaky underground tank.

Although we have never had occasion to actually work on a leaking tank, we do inspect the premises, as well as the different stations, with regard to leaks. We visit the stations, ask questions and if by chance there is a basement close to the gasoline station, we inspect for the odor of gasoline fumes.

G. R. McAlpine, Chief, Oklahoma City, Okla.: All tanks must have Underwriters' labels. At the time of installation, careful inspection and tests are made before the use of the tank is permitted. All underground tanks are inspected annually, and tests are made when required. Inspections are made in regard to the location of the pumps, the proper vent as to size, and location of the discharge end of the vent stack. Tests are made, as required, in the event the company operating the storage shows a loss that cannot be accounted for, or the presence of gas fumes is noticed coming from the ground, sewers, or manholes. These tests are made by removing the vent connection and capping it. A connection is then made to the filling connection. A gauge is placed on it and a few pounds air pressure placed on the tank and then checked. If a leak is present, we require the removal of the tank and the installation on another that meets all the requirements.

In one instance, gasoline was found to be accumulating in a manhole, 50 feet from an underground gasoline storage tank. Tests were made of all tanks and the leaky tank ordered removed.

John Lahm, Chief, Madison, Wis.: We have never had any experience with gasoline leaking from underground storage tanks and finding its way into the basements of nearby structures.

Thomas M. Lane, Chief, Alameda, Cal.: We have had only two occurrences where we had trouble from leaky tanks and that was due to the fact that these tanks were buried in salt marsh land, which caused electrolysis to eat holes in the tank.

Since that experience, I have insisted that the outside of the tank and all its fittings be coated with tar and wrapped with marlin or some other cordage material, suitable to insulate the tank. This system has proven adequate to prolong the life of the tank indefinitely.

In addition to this, if there is any doubt in mind, I insist that a concrete vault be constructed below ground, with sides terminating above the ground level and that the gasoline tank be set in the interior of it and packed in solidly with oil impregnated sand.

When tanks are installed, we have the installer test them before covering, either by the vacuum or hydrostatic method.

We do not test tanks, after they have been installed, with the exception of checking their age in the ground. If there is any doubt about the tank, we insist that it be tested by the same method as was used when it was originally installed.

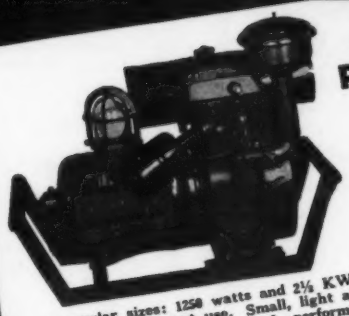
S. J. Flores, Chief, Shreveport, La.: When a leaking tank is found, it is dug up and replaced with a new one.

We do not make inspection of gasoline tanks in our city. Gasoline is measured when it is put in the tank and again when it is taken out. If there is a leak, it can be easily detected by the companies.

George E. Smithers, Chief, Fond du Lac, Wis.: All installations of underground tanks for the storage of gasoline are governed by the State Industrial Commission specifications, and inspections are made by the Building and Fire Departments. We have never found any leaky tanks.

Thomas H. Cotter, Chief, Providence, R. I.: All material and workmanship

"U. S." Portable ELECTRIC PLANTS for dependable FIRE DEPARTMENT SERVICE



Air-Cooled PORTABLE UNIT
with carriers
1250 Watts
2500 Watts
4-Cycle
Quick-Starting

2 popular sizes: 1250 watts and 2½ KW. Designed expressly for fire department use. Small, light and compact, but substantially built for rugged performance and long life. Equipped with carriers for easy portability. Air-cooled, 4-cycle engine. Easy starting. Satisfied users throughout the entire fire department field.

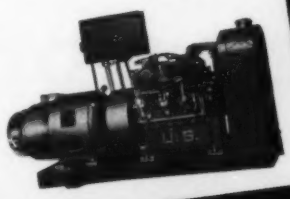
Also special 400 WATT Air-Cooled Unit

2 - 3 - 5 - 7½ and 10 KW UNITS
for permanent mounting on truck
for FLOOD LIGHTING
AC or DC
6 Volt
Battery Starting

Because of their smoothness of operation, compactness of design, neat appearance and proven dependability — these 4-cylinder units are ideal for permanent mounting on fire trucks.

AUTOMATIC EMERGENCY UNITS
for Alarm, Radio and Telephone Systems
AC or DC

Your regular city current may never fail. Then again it may fail tomorrow. Avoid the possibility of any such serious handicap by installing a U. S. Emergency Electric Plant. Operation is fully automatic. Departments all over the country are safeguarding their service with this emergency protection. Illustration shows a 5 KVA U. S. Automatic Emergency Unit.



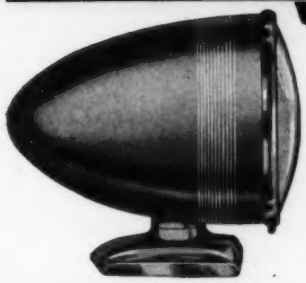
MOST COMPLETE LINE

Write for detailed information

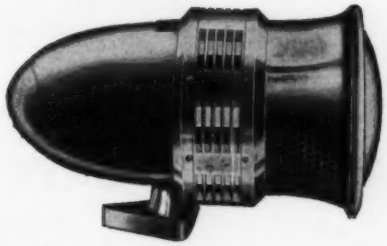
We are builders of the world's most complete line of Electric Plants. In all parts of the world—arctic expeditions or tropical plantations—U. S. plants have proved their steadfast dependability. And the reason: "U. S." generating sets are designed to meet the conditions under which they will operate. Sizes: 350 Watts to 75 KW.

UNITED STATES MOTORS CORP.
430 Nebraska Street Oshkosh, Wisconsin

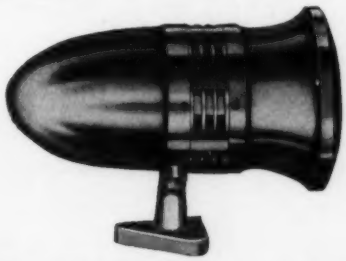
Sterling
SIRENS AND WARNING LIGHTS



OSCILITE.. *—it oscillates* a beautiful light that flashes a powerful, commanding warning and helps to clear the way. Operating mechanism all within the body. No exposed wiring. Mounting brackets furnished.



SIRENLITE... this is No. 30—a powerful siren and flashing light combined. Free rolling, sturdy. Guaranteed electrically and mechanically. Write for Bulletin.

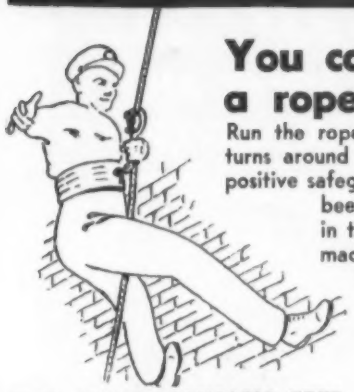


"NUMBER 10" made especially for volunteer fire departments, it is a moderately priced, powerful siren with the same quality workmanship and materials found in all Sterling products. Furnished with cable, switch and terminals.

Write us for bulletin and complete information.

STERLING SIREN FIRE ALARM CO. Inc.
Rochester, New York

THE MORRISSEY LIFE BELT AND HOOK IMPROVED!



You can't get a wrong turn of a rope on a Morrissey hook —

Run the rope through the brake first, then make a couple of turns around the hook and you're ready with one of the most positive safeguards known in fire fighting. The MORRISSEY has been standard in fire departments nearly everywhere in this and other countries for years and now we have made it better, stronger, safer than ever.

DEALERS—The Morrissey Life Belt is famous. Capitalize on its reputation and popularity.

SOME OF ITS FEATURES

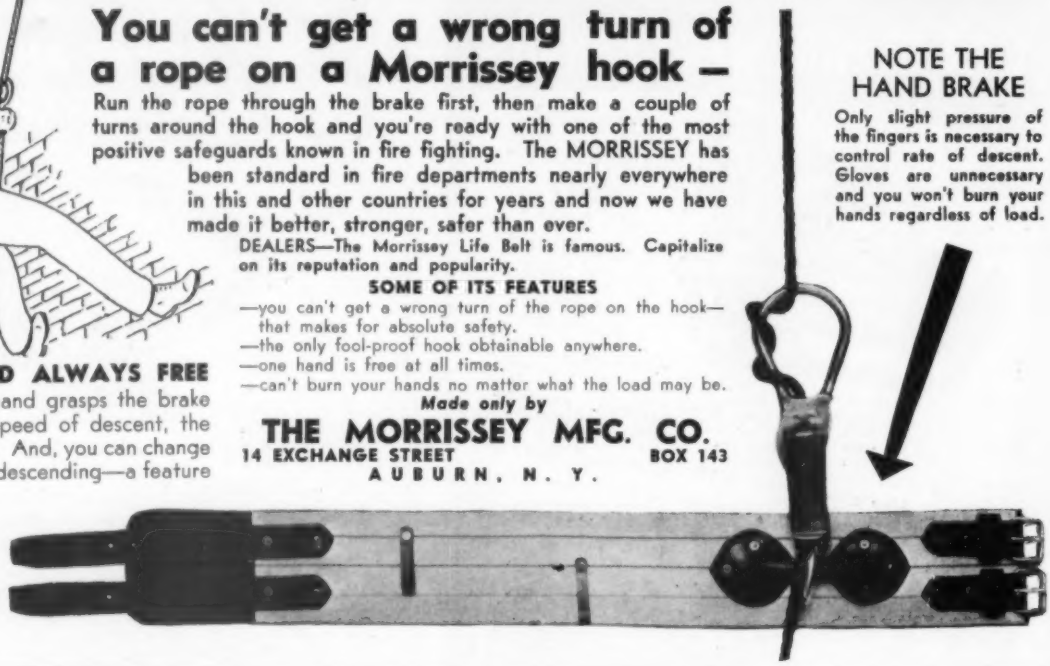
—you can't get a wrong turn of the rope on the hook—that makes for absolute safety.
—the only fool-proof hook obtainable anywhere.
—one hand is free at all times.
—can't burn your hands no matter what the load may be.

Made only by

THE MORRISSEY MFG. CO.
14 EXCHANGE STREET BOX 143
AUBURN, N. Y.

ONE HAND ALWAYS FREE
While one hand grasps the brake controlling speed of descent, the other is free. And, you can change hands while descending—a feature of great value in rescue work.

NOTE THE HAND BRAKE
Only slight pressure of the fingers is necessary to control rate of descent. Gloves are unnecessary and you won't burn your hands regardless of load.



A MINUTE SAVED may mean A BUILDING SAVED!

Use The "OVERHEADDOOR"
TRADE MARK

THE DOOR WITH THE
MIRACLE WEDGE

INSTANT ACTION - HAND OR ELECTRIC OPERATION
Tracks and Hardware of Salt Spray Steel
WOOD OR STEEL PANELS

...ADAPTABLE...

HOME GARAGES	FACTORIES	BOAT WELLS	GREASING STATIONS
PUBLIC GARAGES	FIRE STATIONS	WAREHOUSES	SIMILAR BUILDINGS

BACKED BY
A NATION-WIDE SALES-INSTALLATION SERVICE
Send for FREE Literature
OVERHEAD DOOR CORPORATION, Hartford City, Ind., U. S. A.

of underground tanks are inspected by the Fire Department and an inspector of the Building Department before the tank is covered with earth. The building code specifications for tanks, connecting pipes and fittings are rigid enough to guarantee lifetime use and no other inspections are necessary.

All overground tanks are inspected monthly.

Francis W. Donnelly, Chief, Lincoln, Neb.: We have not as yet encountered a situation where gasoline was found seeping into neighboring structures from leaky storage tanks. We, therefore, do not test for leaky tanks.

Irby Klinck, Chief, Memphis, Tenn.: Several years back, a fire and slight explosion occurred in the basement of the Plaza Hotel, located at 216 Calhoun Street. The firemen extinguished the fire with very little damage. Investigation of the cause of the fire brought out the fact that when the building was erected, the contractors placed drain tile under a concrete floor, with a small cistern, or catchall, in the corner of the building. When the cistern would fill with water, an automatic pump would empty the contents into a sewer. It was found that the water in this cistern was covered with about four inches of pure gasoline. This gasoline seeped through the ground from an adjoining filling station.

Shortly before, the oil company managing this service station had removed old worn-out underground tanks and replaced them with new ones. The cause for this removal was the complete remodeling of the station, which resulted from complaints of the manager concerning leakage of the original tanks. The contractor stated that a large amount of gasoline was spilled in removing these tanks.

About 18 months elapsed between the remodeling of the station and the fire and explosion at the Plaza Hotel. The Fire Department required the oil company to dig up the tanks, wash out the area around the excavation with a large amount of water, and pump this drainage into sewers. This seemed to correct the condition.

Our city ordinances require that all tanks be of the type approved by the National Board of Fire Underwriters; that all pipes and pumps attached thereto be properly inspected by the Building Commissioner before excavation containing tanks is covered; and that all tanks be covered with clay, free from cinders or other foreign matter.

The Building Commissioner's office checks all underground tanks before they are covered, or put into use, for leakage and workmanship. A permit must be secured from the Building Department, before the installation is made. In new work the Building Commissioner requires that an air test be placed on the tanks for a certain length of time.

Operators of filling stations and large dealers in petroleum products are most careful to avoid leaky tanks. A leaky oil tank means loss of money. It the city of Memphis, it is customary for operators of filling stations to check the amount of gasoline in tanks by placing a gauge pole into the hole or opening used to fill tanks each morning and afternoon. If the amount of gas sold does not correspond with the amount of gas which is supposed to have been withdrawn from the tank, an immediate test for leakage is made. The usual procedure is to send a competent skilled mechanic from the shops of the oil company, and have him put an air test on the tank. The pipe is disconnected and capped at the pump, and a gauge is placed on the tank at the fill cap and air pumped in, making an air-tight connection.

Another test is to lock the tank at the pump and at the fill cap for 48 hours, and check with proper gauge for leakage.

Most filling station operators state that leaks usually develop at that spot, where the pipes enter the tanks.

When leaky tanks are removed from the ground, they are usually filled with water, and given a hammer test, under cold water pressure.

The larger oil companies state that when leaky tanks are found, they are immediately removed and replaced with new tanks.

The average capacity of the tanks used in service stations in Memphis is 1,000 gallons. When buried in clay free from cinders or other foreign matter, they last from 20 to 30 years.

C. L. Ingram, Chief, Montgomery, Ala.: We have not had any trouble with leaking gasoline finding its way into buildings. We do not test tanks for underground leaks, but I can readily see how this could cause serious trouble.

Thomas F. Cavanaugh, Chief, Waterbury, Conn.: We had an experience with gasoline leaking from an underground tank and finding its way into a neighboring building. In a dwelling about 100 feet south of a gasoline station, we found a distinct odor of gasoline at the cellar entrance, also in the laundry in the basement. We used an explosive vapor detector meter, which registered a gasoline vapor, but which lacked an explosive angle at that particular time. We summoned the owner of the premises and made known out findings to him. At the same time we summoned the owner of the gasoline station and explained that there must have been a seepage of gasoline from one of his tanks. We directed him to investigate without delay. We also directed that no more gasoline was to be placed in the tank nearest dwelling until the survey had been made.

Work on the excavation and removal of the tank was started within a day, and an inspection made which included an air test and which showed a leakage for the outset. A survey of the tank itself was made, which showed two small breaks near the fill-pipe.

In Waterbury we require swinging joints for all tank connections. No tank for gasoline or oil storage is buried here without inspection on the part of the Marshal's Office.

When leaks are suspected, the contents are pumped or drained out and air tests applied for a period of 24 hours. The history of every tank is obtained before burial and every one must have the approval of the Underwriters' Laboratories.

A 15,000-gallon tank was condemned the other day after the Marshal's staff had witnessed the test required. We do not allow installation of large storage tanks for inflammables above ground.

A. McC. Marsh, Chief, Columbia, S. C.: We have never encountered a situation where gasoline was leaking from underground tanks.

We have adopted in our city the Fire Prevention Ordinance recommended by the National Board of Fire Underwriters. I inspect all underground storage tanks before they are buried, and they must have the Underwriters' label on them. All the requirements of this ordinance are rigidly enforced before I approve the installation on any underground storage tank.

All tanks are inspected before they are placed in the ground. If the tank shows any sign of having received a dent, caused by a blow, or bent while in shipment, or while being loaded or unloaded, it is then tested with air for leaks. We do not allow any tanks that have been in the ground before to be buried again, without first being tested with air.

During the 15 years that I have been inspecting gasoline tanks, I have never found any leaky tanks.

Edward T. Rose, Chief, Wheeling, West Va.: We discovered a leaky tank through complaints of a strong smell of gas in nearby buildings. We made a test of the cellars and found gas fumes coming out of the sewers. We ordered the buildings vacated, the cellars ventilated and several fire plugs in the neighborhood opened to flush out the sewers. This was kept up until the leak was found.

Every tank is inspected and a mercury test made before it is covered up. A tank must hold a column of mercury for 45 minutes. It is installed according to the Underwriters specifications.

If complaints are received about the smell of gas, a mercury test is made of all the pumps in the neighborhood.

We have found several tanks pitted (old installations) where they were installed in cinders without proper protection. We have also found leaks in fittings.

Edward W. Gieselman, Chief, Syracuse, N. Y.: We have not encountered any situation locally wherein gasoline was found leaking from underground tanks into adjoining buildings.

The only safeguard we have instituted against such an occurrence is to require at the time of installation that tanks be placed below the cellar floor level of neighboring buildings.

We have no system calling for inspection of underground tanks, but we do inspect retail service stations and the bulk storage plants as well.

Ambrose Saricks, Chief, Wilkes-Barre, Pa.: There have been one or two instances where gasoline has leaked from underground tanks, and in these instances a check was made and the leak fixed before it had any chance to filter into any adjoining buildings.

The Pennsylvania State Law requires that underground gasoline tanks be placed on a concrete foundation of six inch thickness and covered with at least two feet of covering. The law also requires that underground tanks shall be 12 feet away from any adjoining cellars, if possible, or at least 10 feet.

A monthly inspection is given by Fire Department inspectors. The gasoline companies themselves also check their tanks periodically against

(*Continued on page* 467)

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Friction Loss

To the Editor:

What would be the friction loss in 400 feet of 2½-inch hose from the hydrant to 150 feet of 1½-inch hose with a ⅝-inch nozzle? R. S.

Answer: As no nozzle or engine pressures are given, we must assume one or the other. Forty pounds nozzle pressure on ⅝-inch nozzle is satisfactory, and we shall therefore assume that the nozzle pressure is this amount, namely forty pounds.

First find the discharge from the nozzle at this pressure.

Discharge $= 29.7 \times d \times d \times \sqrt{p}$, where d is nozzle diameter in inches and p, the pressure in pounds per square inch, at the nozzle.

Discharge $= 29.7 \times \frac{5}{8} \times \frac{5}{8} \times \sqrt{40}$
$= 29.7 \times .625 \times .625 \times 6.324$
$= 73.359$ gallons per minute, or approximately 73.36 gallons per minute.

Next change the 1½-inch hose to 2½-inch.

The factor for changing 1½-inch hose to 2½-inch is 0.074.

150 ÷ .074 = 2,227 feet of 2½-inch hose. Add to this the 400 feet of 2½-inch hose in the line and the layout is then equal to a single line of 2½-inch hose, 2,427 feet in length.

The friction loss is found from the following formula (for small flows).

Friction loss (100 feet of 2½-inch hose) $= 2 \times Q \times Q + \frac{1}{2}Q$, where Q is the hundreds of gallons flowing per minute. As the discharge is 73.36 gallons. per minute, "Q" equals 73.36 + 100, or .7336.

Then friction loss (100 feet) is $2 \times .7336 \times .7336 + .3668 = 1.443$ pounds.

Friction loss in 2,427 feet is equal to 24.27×1.443, or 35 pounds approximately.

Holding Life Net, Etc.

To the Editor:

Will you kindly answer the following questions?

1.—What is the main purpose of a vacuum chamber on pumps?

2.—What is the correct position of the foot when holding a life net? Should the right foot be under the net or the left one?

3.—What is the correct method of fighting a fire in a gasoline tank truck on the highway?

M. J. K.

Answer: 1.—To provide a smooth, steady inflow of water to the pump.

2.—Left foot forward under the net.

3.—Carbon dioxide gas available in large quantity will prove most effective in extinguishing gas truck fires. If not available, water spray in the form of fog should be used. If this too, is unavailable, then streams of water from hose lines, sprayed, should be employed. The precise method of operating upon the fire will depend upon many factors, which vary with the fire. Hence, no specific instructions can be given.

Operation of Rotary Pumps

To the Editor:

Describing the action of a gear pump of the positive displacement type, the "Fire Chief's Handbook," on page 384, states that: "The pumping effect is produced by the cups between gear teeth as they travel in contact with the pump housing."

We have always been under the impression that the actual pumping force is derived from the gear teeth themselves as they mesh, and that the displacement is figured from the size of the gears and not necessarily the cups.

Will you please explain the above statement and also what is meant by positive displacement?

M. L.

Answer: In a gear pump, water is carried from the intake to the discharge side in the cup or space between adjacent teeth as these teeth travel around in contact with the pump housing. The meshing of the gear teeth at the center of the pump prevents the return of water to the intake side by this means. The power from the engine is delivered to the pump gears either direct or through pilot gears.

The displacement is calculated from the space enclosed between two adjacent gear teeth and the circular wall of the pump housing.

By a positive displacement pump is meant one which discharges a definite, unvaried amount of water per cycle of operation. In this class would fall piston and rotary gear pumps. A centrifugal pump, on the other hand, is not positive displacement as the impeller can continue to rotate even though there is no discharge of water from the pump.

Relaying at High Pressures

To the Editor:

You publish specific relay instructions in your hydraulics book relative to second size engines, 120 pounds, one-half distance; 200, three-quarters, etc. Could you give me specific instructions as to relaying with first size engines? The first case, no doubt, being pressures at 160 pounds; distance from second engine to nozzle to be one-half distance between first and second engine.

D. P. M.

Answer: Here are given the ratios of lines in relay layouts, when the new 1,000-gallon, high pressure pumpers of the New York Fire Department are employed.

When operating at an engine pressure of 160 pounds or thereabouts, the length of line from the second engine to nozzle should be approximately 4/5 the length of the line from the first engine to the second engine.

When operating at 320 pounds pressure or thereabouts, the length of line from the second engine to the nozzle should be approximately 9/10 the length of the line from the first engine to the second engine.

When operating at 400 pounds pressure, the length of line from the second engine to the nozzle should be approximately 12/13 the length of the line from the first to the second engine.

When operating at 600 pounds pressure, the length of line from the second engine to the nozzle should be approximately 14/15 the length of line from the first to the second engine.

Nozzle Pressures and Discharge of Small Lines

To the Editor:

What is the discharge from a 400-foot line of 2½-inch hose with fifty feet of 1½-inch hose, using a ½-inch nozzle?

What is the discharge from a line of 2½-inch hose, 400 feet in length, siamesed into two lines of 1½-inch hose, fifty feet in length and using ½-inch nozzles on each? Hydrant pressure in each case is eighty pounds.

A. L.

Answer: The solution to your first problem is as follows: First change the 1½-inch hose to 2½-inch. This is done by dividing by the factor 0.074.

50 ÷ 0.074 = 676 feet of 2½-inch hose. Then the total of 2½-inch hose in the line is 400 + 676 or 1,076.

Nozzle pressure = engine pressure ÷ (1.1 + KL), where K is a factor depending upon hose and nozzle diameters. For 2½-inch hose and ½-inch nozzle, K. is .00625.

L, the number of 50-foot lengths of hose in the line, is equal to 1076 ÷ 50, or 21.52.

Engine pressure (which in this case is hydrant pressure) is 80 pounds.

Then N. P.
$= 80 \div (1.1 + .00625 \times 21.52)$
$= 80 \div (1.1 + .1345)$
$= 80 \div 1.2345 = 64.8.$

Discharge
$= 29.7 \times d \times d \times \sqrt{p}$

FIRE CHIEFS!

OUR EXHIBIT at the INTERNATIONAL FIRE CHIEFS' CONVENTION AT SAN FRANCISCO WILL INCLUDE BOTH FRONT AND MIDSHIP MOUNTED CENTRIFUGAL FIRE PUMPS

AMERICAN-MARSH PUMPS

The latest in the BARTON FRONT MOUNTED MODELS will interest those who are looking for the most efficient rural and suburban fire protection equipment. For this service these pumps have no equal.

The BARTON-AMERICAN DUPLEX-MULTI-STAGE MIDSHIP MOUNTED CENTRIFUGAL MODELS represent the latest and most highly developed, also the most efficient design of the age. This type will be shown in action.

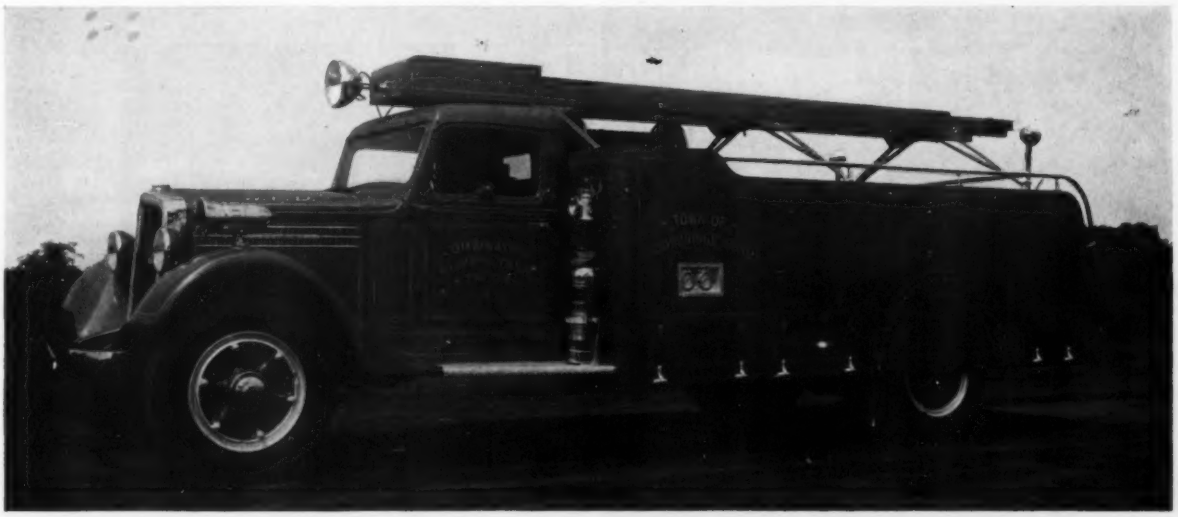
YOU ARE CORDIALLY INVITED TO VISIT OUR BOOTH

AMERICAN-MARSH PUMPS INC.

Battle Creek, Michigan

World's Largest Pump Manufacturers Making Fire Apparatus Pumps

Pumps—and Pumps Only—Since 1873



A SEALAND *Custom-built* BOOSTER WATER TANK

made to the specifications of Woodbridge, Conn.

The last word in modern fire apparatus of its type. Tank has 1000 gals. capacity and above it is carried 1000 ft. of 1½-in. hose. This apparatus also carries six lengths of 3½-in. suction hose, 250 ft. of chemical hose on the reel, a 24-ft. extension and a 14-ft. roof ladder overhead. Of course, there is the usual complement of high quality extinguishers, lanterns, etc. Before ordering new fire apparatus ask SEALAND for suggestions, specifications and a price.

THE SEALAND CORPORATION • Bridgeport, Connecticut

REPLACE YOUR OLD HYDRAULIC EXPANDER WITH THE

DAYTON POWER-DRAULIC

Three-in-one Combination

EXPANDER — HOSE TESTER

EXTRACTOR

(For removing old expansion rings)

Expands all sizes of rings from ¾" to 6" Suction size.

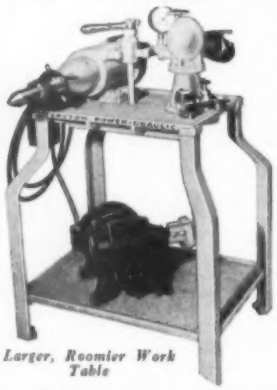
The Hose tester enables the operator to test all hose up to 600 lbs.

An extra attachment enables the operator to remove old expansion rings from old couplings easily and quickly without damage to the coupling.

Powered with ¾ H.P. splash-proof gear head motor.

Likewise furnished to operate manually where price is a consideration.

Allowance on your old machine.



Larger, Roomier Work Table

DAYTON FIRE EQUIPMENT COMPANY

1242-48 West 2nd Street Dayton, Ohio

CHIEF! **Insist on the COLT when buying Shut-Off Nozzles . . . and get the best**

The unquestioned durability of the COLT has for twenty-five years been the subject of discussion among fire fighters.

When efficiency is demanded, the COLT has been found to be the easiest to operate, and will stand the severest test of strength and use better and longer than any other nozzle.

Furnished in three sizes—¾" and 1" for chemical hose, 1½" for leaderline work, 2½" for playpipes. Plain or rubber bumper tips furnished. All shut-off nozzles guaranteed for 5 years.

OTHER EXCELSIOR PRODUCTS

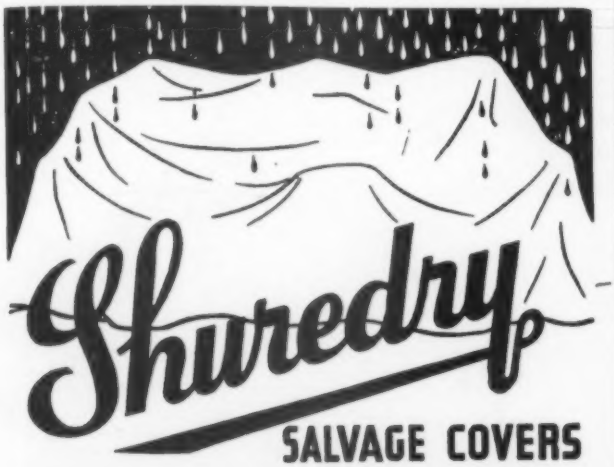
Suction Hose Connections
All Types Hose Couplings
Hose Caps
Hose Plugs
Gate Valves
Reducers
Nipples
Running Board Plates
Strainers
Double Female and Double Male Connections
Leaderline Siamese — Shut-off and Plain Types
All Types of Playpipes
Water Thiefs
Extension Tips
Leaderline Tips
Hose Expanders
Expansion Rings
Hose Washers
Spanner Wrenches
Adapters

Write for catalog and name of dealer nearest you or see your regular supplier.

EXCELSIOR BRASS MFG. CO.

217-219 W. Illinois Street, Chicago, Illinois

Manufacturers of Fire Hose Nozzles for 25 Years



Shuredry

SALVAGE COVERS

Reduce WATER DAMAGE & INSURANCE RATES

Progressive Fire Chiefs everywhere recognize the necessity of improved salvage work if they are to better their records. Shuredry Salvage Covers have been used to illustrate salvage talks by leading Fire Chiefs at many conventions. They have been recommended by these practical men in service for dependability, efficiency and real economy to the department. Easy to handle and to spread, they will not crack when folded or stored. They do not sweat and are chemically treated against mildew.

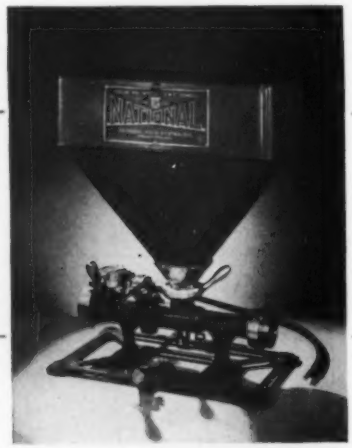
Write for samples and prices.

Fulton Bag & Cotton Mills

Manufacturers Since 1870

ATLANTA ST. LOUIS DALLAS

MINNEAPOLIS NEW YORK NEW ORLEANS KANSAS CITY SAN



"SF-21" Fire Department Type
Capacity: 1,200 gallons of foam per minute

NATIONAL-FOMON

Generators and Chemicals

NATIONAL FOAM SYSTEM

INCORPORATED

Philadelphia, U. S. A.

$= 29.7 \times .5 \times .5 \times \sqrt{64.8}$
$= 29.7 \times .25 \times 8.05$
$= 59.77$ or 60 gallons per minute.

The solution to your second problem is as follows:

First change the 1½-inch hose to 2½-inch, as in the preceding problem. The layout would then be 400 feet of 2½-inch hose branching into two lines of 2½-inch hose each 676 feet long, and each equipped with a 1½-inch nozzle.

Then combine the two parallel 2½-inch lines into a single line. The factor for combining is 3.6.

$676 \div 3.6 = 188$ feet, the length of a single line of 2½-inch hose equivalent to the two parallel 50-foot lengths of 1½-inch hose.

Next, combine the two ½-inch nozzles into a single nozzle. This is done by squaring the diameter of each nozzle, adding the squares so found, and then extracting the square root of the sum.

$.5 \times .5 = .25$.
$.25 + .25 = .50$.
$\sqrt{.50} = .707$ which is the diameter of a single nozzle equal in cross-section area to the two ½-inch nozzles.

Then the layout you will have, which is equivalent to the layout in the problem, is a single line of 2½-inch hose, 588 feet in length, equipped with a nozzle .707 inch in diameter. K for a .707 inch nozzle on 2½-inch hose is .025.

N. P. $= 80 \div (1.1 + .025 \times 11.76)$
$= 80 \div (1.1 + 0.294)$
$= 80 \div 1.394 = 57.4$ approx.

Discharge $= 29.7 \times d \times d \times \sqrt{p}$
$= 29.7 \times .5 \times \sqrt{57.4}$
$= 29.7 \times .5 \times 7.57 = 112.4$

gallons per minute.

Discharge from each ½-inch nozzle is equal to ½ of 112.4, or 56.2 gallons per minute.

Friction Loss in Hose Lines

To the Editor:

What is the friction loss in 1, 1½ and 2-inch rubber lined hose and fabric hose for varying capacities?

H. C. M.

Answer: The following figures for friction loss in 1, 1½ and 2-inch lined hose, are fairly accurate:

Flow in gal. per min.	1-inch hose	1½-inch hose	2-inch hose
10	3.6	0.5	0.1
15	7.2	1.0	0.3
20	12.3	1.7	0.4
25	18.5	2.6	0.6
30	26.0	3.6	0.9
35	35.0	4.8	1.2
40	44.0	6.1	1.5
45	55.0	7.6	1.9
50	67.0	9.3	2.3
60	93.0	13.0	3.1
70	125.0	17.0	4.5
80		22.0	5.7
90		27.0	7.0

Friction loss in unlined linen hose for each of the above sizes is about 2.1 times as much as the figures given above.

Small Line Calculations

To the Editor:

What value for "K" should be used in figuring engine pressure where 2½-inch and 1½-inch hose is used with known nozzle pressure?

Our practice is to lay one 2½-inch line and branch it into two lines of 1½-inch hose each 200 feet in length, using ½-inch tips. I know how to figure this problem if the value for "K" for 1½ hose and 1½-inch tip is given.

E. F. C.

Answer: The value of K for ½-inch nozzle on 2½-inch hose is 0.00625.

The value of K for ½-inch nozzle on 1½-inch hose is 0.084.

In solving problems wherein a single line of 2½-inch hose branches into two lines of 1½-inch each equipped with ½-inch nozzles, it is usually desirable to combine the two lines of 1½-inch hose into a single line of 2½-inch. The nozzles are also combined into a single nozzle, and then you have as a result a single line of 2½-inch hose equipped with a single nozzle.

The factor for changing two parallel lines of 1½-inch hose into a single line of 2½-inch hose is 0.266.

Two ½-inch nozzles are equivalent in area to a nozzle .707 inches in diameter.

The value of K for a nozzle .707 inches in diameter on 2½-inch hose is 0.025.

Salt Brine as an Extinguisher

To the Editor:

Recently during a bad fire at a lumber company, the supply of water ran low and the firemen used salt brine from some nearby pickle vats to put out the fire. Is salt brine more effective than plain water as an extinguishing agent?

D. J. D.

Answer: For ordinary fire department use, where fires of conflagration temperatures are not encountered, the addition of salt to water reduces its effectiveness in extinguishing fires. For example, if water contains 5 per cent of salt, it has but 93 per cent of the effectiveness of fresh water as an agency for quenching fire; with 10 per cent salt, 89 per cent effectiveness; with 15 per cent salt, 86 per cent effectiveness; with 20 per cent salt, 84 per cent effectiveness; with 25 per cent salt, 81 per cent effectiveness.

Sea water has about 95 per cent of the effectiveness in extinguishing fire as does fresh water.

Where high temperatures are encountered, sufficiently high enough to vaporize the water and disassociate the salt, the salt would probably increase the extinguishing effect.

Discharge and Engine Size

To the Editor:

Two lines of 2½-inch hose, each 1,200 feet long, are siamesed to a deluge set with a 1½-inch nozzle attached. If the nozzle pressure is fifty pounds, what is the discharge in gallons per minute and what is the required pump pressure? What size pumping engine would be required for this work?

D. F. M.

Answer: The discharge from a deluge set nozzle is found by the following formula:

Q (discharge in gallons per minute)
$= 29.7 \times d \times d \times \sqrt{p}$
$= 29.7 \times 1\frac{1}{2} \times 1\frac{1}{2} \times \sqrt{50}$
$= 29.7 \times 2.25 \times 7.07$
$= 472.45$ gallons per minute.

To solve for engine pressure, the following formula is used:

E. P. $=$ N. P. $\times (1.1 + KL)$.

K, the factor depending upon the nozzle and hose diameters, is, for two parallel 2½-inch lines of hose with deluge set, 1½-inch nozzle, 0.135.

L, the number of 50-foot lengths of hose in the line equals $1200 \div 50$, or 24.

Then E. P. $= 50 \times (1.1 + 0.135 \times 24)$
$= 50 \times (1.1 + 3.24)$
$= 50 \times 4.34 = 217$ pounds

engine pressure.

A 1,000 gallon pumper (1,000 gallons per minute at 120 pounds pressure) should do the work.

Killian Chief of Fort Worth

On retirement of Chief S. Ferguson of the Fort Worth, Tex., Fire Department, Capt. C. C. Killian was appointed to fill the vacancy. Chief Ferguson was

Chief C. C. Killian

retired on half pay with the rank of Chief Emeritus.

Chief Killian was born and reared on a farm in Central West Texas, and attended John Tarlton Agricultural College at Stephenville, Texas.

After leaving Tarlton College he moved to Fort Worth in 1918. He joined the Fire Department August 1, 1922, and was appointed Lieutenant August 6, 1926; Captain, September 7, 1938.

Chief Kilian is forty-one years of age, married, and has one son. He is Vice-President of the Forth Worth Firemen's Relief and Benevolent Association.

Mowery, Assistant Chief, Attleboro, Mass.

Joseph O. Mowery has been appointed Assistant Chief of the Attleboro, Mass., Fire Department. His promotion resulted from a unanimous recommendation sent to the Mayor by the Board of Fire Engineers. Mowery has been a member of the department for the last twenty-five years.

The Fire Problem of the Oil Burner

Oil Heating Apparatus for Domestic and Industrial Purposes Require Careful Supervision and Control

By CHIEF JOHN J. BRENNAN
Fire Department, Pelham Manor, N. Y.

WE have had the opportunity, during our time in this profession, to see a great and rapid change in oil burners. Oil is known to have been burned for heating for more than a century, but only in the last two generations has any progress been made toward burning it in a scientific manner.

Oil as it comes from the wells is called crude petroleum, and is divided into two classes, the bases of which are paraffin and asphalt. Valuable light products such as gasoline etc., are obtained on distillation of the oils, and the residuum is what is known to the trade as a fuel oil. Hydrogen and carbon in the oil are in the form of hydrocarbons. These can be vaporized and driven off by heat, and afterwards condensed to liquid form.

The Process of Distillation

The process of separating these compounds from the crude oil is called distillation. As these different compounds do not have the same boiling points, but vaporize at different temperatures, it is possible, with careful regulation of the temperature in the distilling apparatus to drive off one at a time, in certain order, according to the boiling point of each, such products as petroleum ether, gasoline, naptha and kerosene. The remainder is the residuum which consists of fuel oil, lubricating oils, paraffin and asphalt. In other words fuel oil is simply the heavier compounds of carbon and hydrogen contained in crude petroleum, the lighter compounds having been driven off by distillation.

Fuel oil is determined by its specific gravity, viscosity, flash point, heat value, and the sulphur, water and sediment content.

Specific Gravity and Viscosity

Specific gravity is defined as the ratio of the weight of a certain volume of a substance, to the weight of the same volume of water. When oil is referred to as of a certain Baumé,

Chief John J. Brennan

it is simply another term for the specific gravity of the oil, and is measured by an instrument called a hydrometer, which was invented by Anton Baumé, a French chemist.

The viscosity of oil is a measure of fluidity, generally expressed in seconds, and is the time required for a fixed quantity of oil, to flow through a given size orifice at a fixed temperature.

Importance of the Flash Point

The flash point is defined as a temperature to which oil must be heated to give off vapors, which when mixed with air, produce an explosive mixture. It is determined by heating a small quantity of oil gradually, and passing a small flame over its surface. Finally a blue flash, due to the ignition of the gas, is observed, and the temperature at which it occurs is called the "flash point."

The flash point of oil is important, as the indication of the highest temperature at which it can be stored, without being potentially dangerous. If heated above this temperature it will give off inflammable gas, and if this gas collects in a closed space with air, it may cause an explosion if an open flame reaches it. The higher the flash point, the less danger there is from this cause. The burning point is defined as a temperature at which oil will give off vapor, which when ignited, will burn continuously. The burning point is usually about 30 degrees above the flash point.

First Devices for Burning Oil

The first patented device for burning oil consisted of a series of griddles over which the oil trickled and burned. Later atomization was accomplished by superheated steam. Numerous types of burners have been developed, some of which were quite crude, and consisted of dropping the oil on hot refractory material in an open pan. This led to the development of the natural draft vaporizing burner, and while this was some improvement, it did not provide the uniform combustion necessary for reliable operation.

To overcome this handicap burners were designed with a fan blower that mechanically forced the air for combustion into the combustion chamber. This development was the foundation for the modern mechanical draft automatic oil burner, which was introduced to the general public shortly after the close of the war in 1919, although before that, as early as 1904, oil was being burned on ships in the United States Navy. It has been in common use on the sea ever since.

Modern Progress in Oil Burning

Now we come to a few definitions, lining up modern knowledge. Oil heating burners mean and include any device arranged for the purpose of burning fuel oil.

Oil heating equipment, consists of all the equipment connected with the oil heating burners, located within the building; including internal and external supply, storage tanks, piping, electrical wiring, and all accessories.

Oil burners can properly be classified under three groups: Domestic, commercial and industrial burners. The domestic burner, while formerly semi-automatic, or manually controlled, is to-day fully automatic in its operation.

CHIEF! Protect your men
Give them the old reliable

GLOBE SUITS

Finest Suits They Can Put on Their Backs!

Globe suits have been worn by firemen everywhere for 33 years and these men acclaim them as the best assurance of keeping warm and dry under most severe conditions. Coats are light, easy to work in, yet warm as toast even when you've been drenched. They have wide chest protectors, pockets with patent stays that won't sag or tear out and warm wristers. All our suits are made of tough durable fabric with waterproof interlinings and warm linings. Choice of brown, black or white, any length. See one of these suits—convince yourself that it's the finest suit you can buy. ORDER NOW!

$10.00

is the price of the coat alone. 35-in. in length. Tough, durable material.

PANTS
TO MATCH
$7.50

GLOBE MANUFACTURING CO.
Pittsfield, N. H.

The Approved Automatic Standard Inhalator

Your Inquiry on Safety Equipment

addressed to us, is handled by competent men trained to aid in solving safety problems.

"Pioneers in Equipment of Proven Merit and Efficiency"

Gas Masks, Hose Masks
Oxygen Breathing Apparatus
Parts for American Atmos & Draeger Apparatus
Service On
Cylinders, Valves, Gauges, Etc.
First Aid Kits & Refills
Protective Clothing and Safety Appliances

A Few Territories Available for Distributors

Bishinger-Koehler Manufacturing Company, Inc.
Manufacturers of Oxygen Equipment Products
7838-42 KELLY STREET (Member: National Safety Council, Inc.) **PITTSBURGH, PA.**

No. 5 No. 3 No. 1

DAY FOG
VAPOR NOZZLE
KILLS FIRE

Latest Discovery of a SCIENTIFIC PHENOMENON

REVOLUTIONIZES FIRE FIGHTING *with* ACTUAL FOG

Produced by Plain Water Through the

DAY 3-WAY

FOG and VAPOR NOZZLE

EXPELS 75% LESS WATER

No. 2 and No. 5-S
Vapor Tip for Standard Shut-off Nozzle
(Vapor Only)

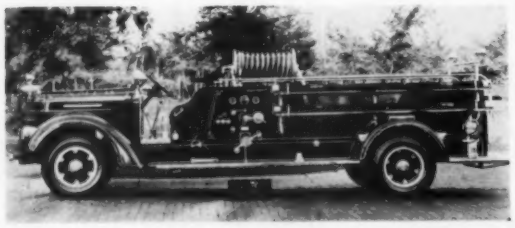
The Bureau of Steamboat Inspection has approved the Day No. 3 fixed vapor nozzle for marine trade.

Kills instantly Oil—Gasoline—Lacquer—Varnish and ALL other High VOLATILE FIRES!
Can be efficiently operated by one man up to 200 lbs. pressure. Fog, Straight Stream and Shut-Off. Made in five different sizes, they meet all requirements. Prices range from $14 to $30.

Full Details and Prices on Request
DEMONSTRATION
Dealers Inquiries Solicited
"BEST BY TEST"

DISTRIBUTED BY

JOSEPH L. DAY
671 DELAVAN AVENUE BUFFALO, N. Y.



Our Trucks are Powered by International

183 company-owned sales and service stations stand squarely behind International fire trucks operating in their respective territories.

NATIONAL FIRE APPARATUS CO.
Galesburg, Illinois

NEW ENLARGED EDITION—JUST ISSUED

Questions and Answers for Lieutenant and Captain

a book every ambitious fire fighter should have

A 310 page book, fully illustrated, by Geo. J. Kuss, former Deputy Chief, New York Fire Department, and Fred Shepperd, Editorial Director of FIRE ENGINEERING.

Contains questions asked at promotional examinations in practically every city in the country where civil service examinations are held, with answers.

Includes chapters on Report Writing, How to Answer Examination Questions, Chemistry Examination Questions, Fire Fighting Questions, Overhauling, Ventilation, Fire Prevention, Inspection, Evolutions, Drills, Use of Apparatus, Rescue Work, and in fact all the topics covered by the fire department promotional examinations.

If you are studying for a promotional examination, you need this book, if you are not, it will nevertheless give you a vast amount of valuable information on up-to-date fire fighting methods.

Price **$2.50** *postpaid*

Book Department,
FIRE ENGINEERING,
24 W. 40th St., N. Y. C.

Enclosed find money order (or check) for $2.50 for which please send me, postpaid, "Questions and Answers for Lieutenant and Captain."

Name..... Rank.....

Address..... Date.....

The commercial burner, used in connection with heating boilers of apartment buildings, schools, churches, etc., is either fully automatic, semi-automatic, or manually controlled. The majority of burners in this class are semi-automatic, but the manufacturers during the past few years are making this type fully automatic, with very satisfactory results.

The industrial burner, used for power plants, and larger industrial processes is mostly manually controlled.

To this point of efficiency we have progressed in a little more than a quarter of a century. But although our modern burners are highly efficient, and every precaution is taken to make them safe, both to the owner and the community, they still have their problems.

Hazards Due to Faulty Installation

We all agree that the greatest hazard of oil heating is due to poor installation. Poor installation is brought about by certain individuals using inferior materials, or by ignorance on their part as to what constitutes a safe and satisfactory installation. It is individuals of this type that have brought discredit on the oil heating industry, and have led cities, towns and villages to adopt drastic regulations, which finally react upon industry as a whole.

In the first place no oil burner that has not been listed as inspected by the National Board of Fire Underwriters should be permitted to be installed.

Reliable Controls Essential

The successful operation of an oil burner depends upon reliable controls, and consists of thermostat, aquastat, pressurestat, and protectostat stack safety. They should be so constructed that if any one of them fails to operate properly, they will immediately shut off the burner operation.

The type of ignition is usually decided upon by the designer, or the mechanical design of the burner. The most important attribute of any ignition system is reliability. Some types of burners use gas, others an electric spark, while others use a combination of both gas and electric ignition. Where electric ignition is used, some types have the spark on continuously, while the burner is in operation, and in some the spark is intermittent. Which of the two systems is the better is a debateable question.

All electric work should be done by a licensed electrician and comply with the local regulations, or the National Electric Code, and should be thoroughly inspected by an electrical inspector, or an inspector of the Board of Fire Underwriters. There should be a remote control switch placed at the top of the cellar stairway, or some other convenient location, so that the burner may be shut off in case of emergency.

The piping system used in connection with an oil burner depends upon the particular design of the burner, and whether a gravity system or pump is used. Standard wrought iron, steel or brass pipe, or approved copper tubing, with substantial fittings should be used, and should be protected against injury, and proper allowance should be made for expansion, contraction, jar and vibration. It should be separated from electric wiring not enclosed in approved conduit, as provided in the National Electric Code.

Connections, Piping and Vents

All connections should be made perfectly tight with well fitted joints, with the supply or suction pipe not less than one-quarter inch in diameter, and where oil is pumped to the burner the return should be at least the same diameter.

Piping should run as directly as possible from the storage tank to the burner without sags, and where possible, should pitch toward the tank. All brass or copper tubing should have a wall thickness of not less than one-sixteenth of an inch for small sizes, and heavier where necessary. Where rigid pipe is used on underground tanks, swing joints should be provided, so that in case the tank settles the connections will not be impaired.

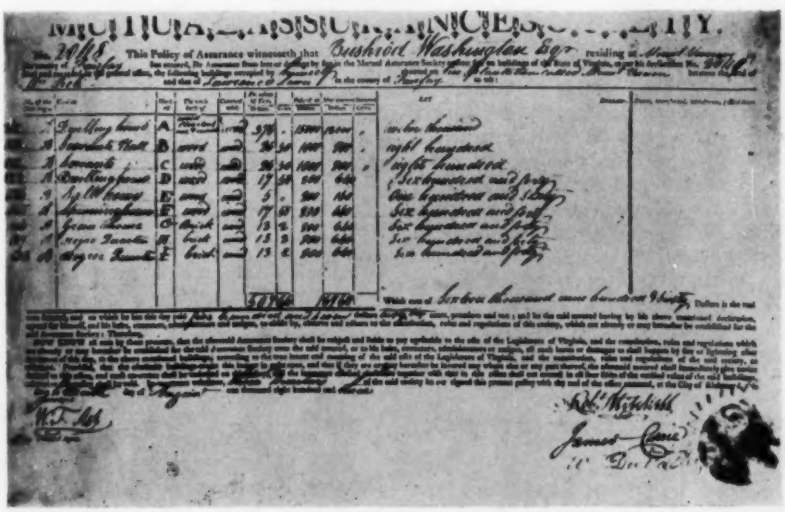
Vent openings should be of sufficient size to permit the flow of oil during filling operations. They should terminate outside the building at a sufficient height above grade, and at least three feet from any window or other opening, and planned to be in full view of the operator while the tank is being filled.

Every city, town and village should have a code or regulations governing the installation of oil burners, or the regulations of the National Board of Fire Underwriters should be adopted.

Fuel Oil Storage

Fuel oil storage is usually classified under two headings; inside exposed basement storage tanks, and underground tanks, although I believe that in some sections of the country, they permit outside above ground storage tanks. The latter, to my mind, should not be permitted.

The two essential qualities of storage tanks are durability and tightness. The joints are either welded or riveted, and generally speaking, are made to conform to the specifications of the National Board



Old Insurance Policy on Famous Mt. Vernon Property

In 1803, Bushrod Washington took out a policy to cover the now famous property of Mt. Vernon, in Fairfax County, Va. It is interesting to note that the main house was valued at $15,000 and insured for $12,000. The total of insurance on all the nine buildings was $16,960, and the premium paid, $507.66.

of Fire Underwriters, but vary in different municipalities having their own regulations. They should be sufficiently strong to bear without injury the most severe strain to which they may be subjected to in practice.

Inside Versus Outside Tanks

There are two reasons why the inside storage tank has been gaining in favor. The first is the low cost both to the consumer and the dealer, and the second, that installations are, as a rule, exposed, enabling leaks to be readily detected. That cuts the cost of service charges.

While the initial cost of underground storage tanks is more, they have many advantages to the consumer, and are much safer, in that the tanks are either buried under the basement floor, or located outside the building. The only disadvantage might be to the dealer, where there might be some obstruction, or leak in the suction line, outside the building.

Outside tanks should be at least five feet or at least a safe distance from the foundation wall. In locations where the earth is soft it is often necessary to anchor the tank in concrete to prevent the empty tank from forcing its way through the soft moist earth to the surface. Tanks should be cleaned at least once a year, as water and foreign material settle to the bottom of the tank, and in time will rust it through. Where conditions are such that the top of the tank is above the burner, adequate provisions should be made to prevent siphoning.

All tanks should have gauges, as they give the users means of determining the amount of oil on hand. No glass gauge should be permitted, nor any gauge the breaking of which, will permit the oil to escape from the tank.

The practice of filling storage tanks by power pumps, mounted on truck tanks, has increased the possibility of damage to the storage tanks, and in my opinion, vent openings should be of 1¼-inch minimum, to prevent dangerous increase of pressure in the storage tank.

After the tank and piping have been completed, a test of the system should be made to see that all connections are tight.

Causes of Fires from Oil Burners

We read occasionally in the newspapers of fires that are caused by oil burners, and it is of personal interest to find the cause of such fires, and determine how they may be prevented in the future.

In the domestic burner most fires are caused by carelessness on the part of the owners or occupants in not having the burners serviced by competent persons at regular intervals.

In industrial or commercial establishments fires are caused by carelessness or ignorance on the part of employees, who have not received proper instruction as to the results likely to ensue, if they fail to exercise due caution at all times.

Men employed in making repairs on fuel oil systems use but little care, and have but little knowledge of the importance of shutting off the fuel supply while repairing the system. Attempts on the part of inexperienced employees to repair leaks have also caused fires.

An Apartment Oil Burner Fire

A short time ago in the village of Pelham Manor, an alarm of fire brought the apparatus to an apartment building containing 36 families. The fire was in and around the oil burner. The boiler room was located in the sub-basement, covering an area of approximately 600 square feet, and was two feet below the sub-basement floor. Two high pressure steam boilers and four oil burners were used to heat the building.

The system had been installed previous to the adoption of the regulations governing fuel oil systems. A 1½-inch pipe (suction line) was used to supply the burners, with flexible copper tubing from the suction line to each burner. The superintendent of the building, who was repairing one of the burners, failed to shut off the fuel supply, and a fire occurred from some unknown cause, which communicated to the oil that had spilled on the floor around the burner.

Decided to Call Fire Department

He tried to extinguish the fire with several 2½-inch gallon extinguishers and failed. He then decided to call the Fire Department. On my arrival, I found heavy black smoke coming from the basement windows, which entirely enveloped that portion of the building directly over the boiler room. The occupants of the building were in a state of panic, and were rushing to safety from their apartments on the upper floors. Two lines (2½ and 1½-inch) were stretched inside the building to the seat of the fire, and when I reached the entrance door to the boiler room, I found that the entire floor of the boiler room was covered with oil, and entirely involved in fire.

I decided to use the 1½-inch line with a ½-inch tip, and directed the pipeman to keep the stream moving along the ceiling. Due to the intense heat the water was immediately turned into steam, which in a short period of time, blanketed the oil and extinguished the fire.

This is a definite example of what can occur through inexperienced employees, who do not use care and precaution, when making repairs to fuel oil systems, and is additional evidence to point the need for comprehensive local regulations.

Regulations Should Be Reasonable

In adopting such regulations, Fire Chiefs must remember that they should be reasonable, for after all who pays but the property owner? Yet Chiefs do disagree; some disapproving of the gravity feed, or having the fill to the tank extend to the curb, while others insist that inside tanks be enclosed in fireproof material. Others again, lay stress on the amount of oil allowed to be stored in the cellars, gauge of tanks, etc.

Final Inspection Should Be Made, After Installation

What we have to contend with is faulty installation and carelessness. To minimize the danger of faulty installation, the Chief, or other persons having supervision, should, after the installation has been completed, make a final inspection, to see that the burner and all controls are operating satisfactorily. A permit should then be issued for the quantity of fuel oil that can be stored in the tank.

At that time, owners and occupants should be informed on the basic principles of this essential feature of their home, and advised to have their burners serviced at regular intervals, or at least twice a year, for the sake of economy as well as safety.

The first and final ounce of prevention rests pretty much with the Chiefs. If they, or other persons having jurisdiction over the installation of oil burning equipment, will make a thorough inspection for any defects in the system, before the issuance of a permit, the oil burner will have the only help it needs to become one of the great standby comforts of modern life.

(From a paper read before the Fire Chiefs' Emergency Plan of Westchester County, N. Y.)

MIDWESTERN Firemen's Coats

Are the World's Finest

100% Waterproof, Durable and Flexible, made of VANITEX, a special Acid-Proof, Soft, Pliable, material, manufactured exclusively for MIDWESTERN. This is the only firemen's coat equipped with the Famous SAFETY SNAP that can be instantly fastened or unfastened with one hand, and will not catch on clothing. See one of these superior coats before buying any other. You'll pick MIDWESTERN!

BEWARE OF IMITATIONS

Look for the double eagle label on the coat you buy.

Write for our Free Illustrated Catalog showing complete line of our rubber and canvas garments. Satisfaction Guaranteed.

U. S. Pat. No. 1944475 — Canadian Pat. No. 345601

MIDWESTERN MANUFACTURING CO.
MACKINAW, ILLINOIS
Manufacturers of a Complete Line of Quality Firemen's Clothing

Saving Lives That Need Saving

Here, there and everywhere, it's this combination that's hard to beat in life-saving work. . . .

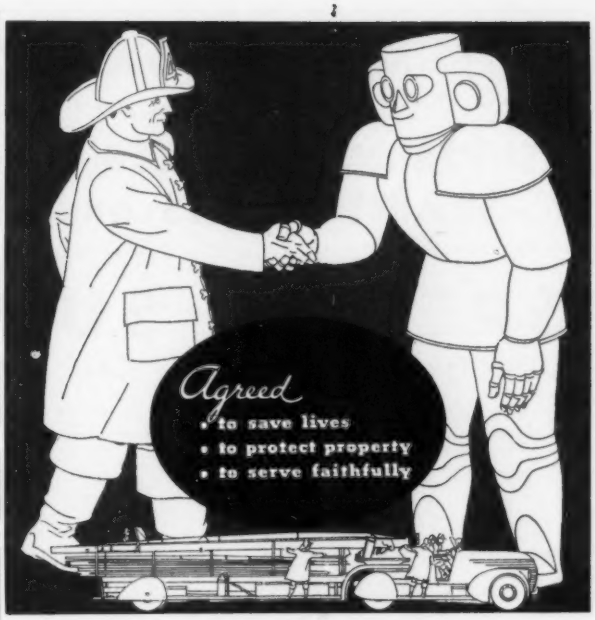
The ASPIRATOR clears out the air passages; the RESUSCITATOR supplies the emergency lungs; the INHALATOR completes the treatment.

It's the E & J.

ICR PORTABLE MODEL

(Accepted: Council on Physical Therapy of American Medical Association) . . . Write for particulars.

E & J Manufacturing Co., Glendale, Calif.



Based on a fireman's own principles of safety and dependability, genuine Westinghouse Automotive Air Brakes provide a positive control capable of insuring safe braking action for every type of fire-fighting equipment. The identical Air Control which is universally accepted as standard equipment by the world's foremost manufacturers and operators of commercial highway transportation due to its positive power, efficiency and economy of operation alone can guarantee the exceptional margin of safety which modern fire apparatus requires. Although fire engines are seldom called upon to stop in a hurry, nothing less than the world's finest control can insure the quick, positive braking action so important in emergencies. For information concerning the many exclusive advantages of genuine Westinghouse Air Brakes, in conjunction with fire-fighting apparatus, consult your local Bendix-Westinghouse distributor, district office or write the manufacturer.

WESTINGHOUSE AIR BRAKES

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE CO.
PITTSBURGH, PENNSYLVANIA

Let Us Solve Your **SAFETY PROBLEMS**

DEMAND THE MOST MODERN EQUIPMENT

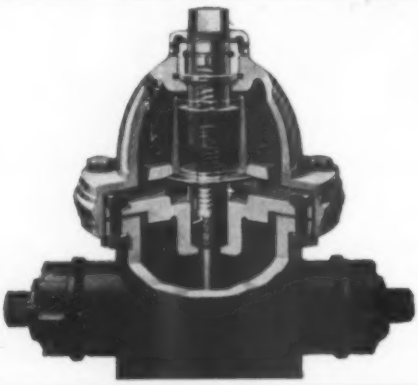
SUPERIOR LIFE NETS, LADDER BELTS, TRAINING NETS and STRUCTURES

For Greater Protection to Lives

SPECIFY SUPERIOR

SUPERIOR FIRE EQUIPMENT CO., 72-76 PARK PL., NEW YORK

WILLIAM MOELLER
Designer
Consultant



MUELLER-COLUMBIAN FIRE HYDRANTS

The SELF OILING feature of these hydrants is a favorite with Fire Chiefs. They like it because they know the threads cannot rust, it cannot freeze, and the operating nut will always turn easily. There's no time lost hooking up to a Mueller-Columbian.

WRITE FOR FULL INFORMATION

Mueller Co. Chattanooga, Tenn.

FIRE CHIEF'S HANDBOOK

—worth many times its cost to any ambitious fireman

By FRED SHEPPERD

THERE have been many books on various phases of fire fighting, but never has there been anything so complete and authoritative as this. From newest call man to veteran chiefs, they all agree it's the greatest book they've ever owned on fire fighting. It's a veritable gold mine of information, truly called the bible of the fire fighting profession.

The progressive fire chief or fireman interested in up-to-date information on fire fighting methods will find in this valuable book just the sort of information they want, written in plain, easily understandable form. It has proven especially helpful in preparing for promotional examinations. But whether you are on top or just beginning you'll find this book worth many times its modest cost. Order your copy now.

$4.00

per copy postpaid. If book is not what you expected send it back within 5 days, we will gladly refund your money.

Some of the Subjects covered:

TOOLS AND EQUIPMENT
APPARATUS, PUMPS
EXTINGUISHERS AND THEIR USE
FIRE STREAMS
FIRE FIGHTING METHODS
FIRE STATION DESIGN
TRAINING OF FIREMEN
SALVAGE OPERATIONS
BUILDING INSPECTIONS
VENTILATION AT FIRES
CARE OF FIRE HOSE
CHEMISTRY OF FIRE
HEAT AND ITS ACTION
DRILL TOWERS and many others

ACT NOW!

CASE-SHEPPERD-MANN PUB. CORP.
24 West 40th Street, New York, N. Y.
Enclosed is Money Order ☐ or Check ☐ for $....., for which please send me ..... Copies of "The Fire Chief's Handbook," postpaid (returnable in 5 days if not satisfactory)—or—send it C.O.D. I'll pay postman ☐.

NAME .....

POSITION .....

ADDRESS .....

WHAT'S BURNING

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of August, 1939. These figures, compiled from the telegraphic reports, are based on estimates made at the time, and are subject to later investigations and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Month Ending August 31	Loss in Thousands of Dollars
Hartsville, S. C.—Plant of Pee Dee Furniture Co., damaged	50
Sylvania, Ga.—Whse. of Screven Oil Mill destroyed	80
Salem, Mass.—Bldg. of Salem Gas & Electric Lighting Co.	50
Vancouver, Wash.—McLaughlin Lumber Co., and adj. business establishments	65
Decatur, Ala.—Factory of Decatur Box & Basket Co.	50
Chicago, Ill.—Property of Northwestern Malt & Grain Co.	80
Limestone, Tenn.—Post office and adj. property	50
Cary, Miss.—Several stores and post office destroyed	50
Wilkes-Barre, Pa.—McCrory dept. store and adj. property	125
Tangent, Ore.—Business and residential property	65
Gardner, Mass.—Property on Heywood Farm, owned by city	80
Baltimore, Md.—Bldg. of Crown Cork & Seal Co., damaged	50
Seattle, Wash.—Property of Pakratz Lumber Co.	80
Boise, Idaho—Boxing arena, two whses., and lumber yard	800
Birmingham, Ala.—Plant of Southern Cement Co., damaged	80
Woonsocket, R. I.—Grocery whse. of J. Meunier & Sons	50
Centralia, Wash.—Property of Eastern Railway & Lumber Co., and adj. buildings	225
Deweyville, Tex.—Kiln of Peavy-Moore Lumber Co., destroyed	65
Jamestown, Pa.—Plant of Jamestown Paint & Varnish Co.	80
Marlin, Tex.—Spencer House and adj. property damaged	50
Wenatchee, Wash.—Wells & Wade business block	250
Haledon, N. J.—Plant of Ming Toy Dyeing Co., destroyed	65
Portsmouth, Ohio—Wholesale grocery of C. D. Kenny Co.	50
Richmond, Va.—Plant of Rosson Mfg. Co., damaged	50
Barnesville, Ga.—First Methodist Church destroyed	50
Millersburg, Ind.—Miller general store and other adj. establishments	50
Muskegon, Mich.—Property of Shaw-Walker Co., damaged	80
Goshen, Ind.—Four business establishments destroyed	60
Plattsburg, N. Y.—Bldg. of Roman Catholic Summer Schools	50
Milwaukee, Wis.—Coal dock of Fellens Coal & Dock Co., damaged	50
Pine Ridge, Ore.—Box factory and mill, also 200 dwellings	1,600
Cleveland, Ohio—Plant of Vanis Builders Supply & Lumber Co.	65
McAlester, Okla.—J. C. Penny Co. store and adj. property	250
Kent, Wash.—Storage Plant of Washington Frosted Foods, Inc., destroyed	80
Braymer, Mo.—Griffith Implement building destroyed	50
Baltimore, Md.—Property occupied by J. C. Stalfort & Sons, Inc.	65
Moosonee, Ont.—Ste. Anne Roman Catholic School and Hospital destroyed	65
North Pembroke, Mass.—Plant of G. H. West Co., destroyed	65
Dallas, Tex.—Cotton and whse. of Farmers & Merchants Compress & Whse. Co.	225
Indianapolis, Ind.—Property of Capitol Furnace & Stove Repair Co.	50
Norwich, Conn.—Property owned by Brooklyn Outfitters	50
Wallace, Idaho—Several establishments in Day Building	90
Sharpsburg, Pa.—Business and residential property	95

31ST.
FIRE FACTS
BY OTIS SMITH
THE FIRST FIRE COMPANY IN THE U.S. WAS APPOINTED BY SELECTMEN OF BOSTON IN 1678, TO OPERATE A HAND TUB. THE TUB WAS KEPT IN THE BASEMENT OF A SCHOOL ON HANOVER ST.
THANKS TO LYNWOOD BRADLEY NEW YORK CITY.
L. HOERTSCH and a part of one of displays he aided in making.
FIRE
PREVENTION-PROTECTION
KENOSHA FIRE DEPT.
LEND A HAND
FIRE PREVENTION WEEK
ANY FIRE DEPARTMENT CAN MAKE EFFECTIVE FIRE PREVENTION DISPLAYS AT VERY LITTLE EXPENSE.
THANKS TO FIREMAN LESLIE HOERTSCH --KENOSHA, WIS.

Boys Start 5-Alarm Fire

Two boys, 13 and 14 years old, who were later apprehended, started a fire in Detroit, Mich., which resulted in a five-alarm blaze. The first company at the fire pulled the second and third alarms at once and shortly afterwards the fourth and fifth alarms were sent in.

A 1938 Seagrave enclosed pumper was driven away a minute before a wall collapsed, but the debris badly damaged a Mack pumper.

The building was an abandoned factory, three stories high. Although the building was full of windows, firemen had a difficult time as the windows were all boarded.

S. THOMPSON

Want Oil Trucks Barred

Every speaker on the program of the Sandhills Firemen's Association Convention, at Hamlet, N. C., was scathing in his condemnation of the dangerous oil trucks which ply the highways and streets.

Declaring that "The time has come when the individual fireman of North Carolina must gird himself to fight a single handed battle for his protection while on duty," Sherwood Brockwell, State Fire Marshal, addressed the 13th annual convention.

Chief Sam Tillinghast, Fayetteville Fire Department, urged that members of the association foster any legislation that would help to outlaw oil trucks. He said that he was unable to describe the fire in his city, an oil tank truck and train collision which burned four persons to death, but that it was terrible and the fight to clear streets of petroleum carriers must be seen through to a finish.

Chief Frank Bennett, Durham, and Chief Palmer, Charlotte, also spoke. Chief Bennett urged the attendance of all association Chiefs at the State-Southeast Chiefs' convention in Durham this month. James Flora, President of the State Association, spoke at the meeting.

Officers for the next year were chosen as follows: President Chief Tillinghast, Fayetteville; Vice-President, Chief Brasington, Aberdeen; Secretary, Assistant Chief Allen, Southern Pines. Fayetteville was chosen as the convention city for next year.

D. G. SPENCER.

Correspondence

Drill Team, a New Activity

To the Editor:

In the August issue of FIRE ENGINEERING, I read an interesting account of the San Francisco Drill Team. I subscribe to all of the praise given to this activity, and I am sure that they will make a fine impression at the convention in September.

However, the second paragraph states: "Believed to be the only team of its kind in the United States." I want to point out that we organized a similar team in Boston last year. It has appeared in all the public parades and in several public exhibitions, since its organization. The squad consists of forty men, who received drill instruction every day for three months, and once a week thereafter. Lieut. Beaupre, a Major in the United States Army during the World War, is in charge of the unit. He is well qualified for the assignment.

This team appeared at our Annual Ball at the Boston Garden, before 20,000 people, and it has served as an escort to the Mayor of Boston, at two patriotic parades this year.

The team is to be a guest of the Boston City Club, with the Fire Department Band, on November 23. It will give an exhibition which will be followed by a testimonial banquet, given by the City Club. San Francisco's popular Chief, Charles Brennan, is as enthusiastic as our Chief of Department, Samuel J. Pope, about the good which this type of activity does for the Fire Department.

Sincerely your,
WM. ARTHUR REILLY,
Fire Commissioner, Boston.

In Defense of Chiefs Davis and Simmler

To the Editor:

I have been reading FIRE ENGINEERING for the past number of years with a considerable amount of interest and I have always admired the clear-cut manner in which you have brought interesting fire information to your readers all over the country.

I know that you have a large circulation in our city and they, in turn, are acquainted with the turn of events which have taken place within the last three weeks. I feel your readers will be interested to know that justice has been victorious and we now have restored to active duty and in complete charge of our Fire Department, Ross B. Davis as Chief Engineer, and William Simmler as Deputy Chief.

For the benefit of those living outside of the city of Philadelphia, may I state that in 1936, when our new Mayor of the city of Philadelphia came into office, he attempted to purge from the fire department, Deputy Chief Simmler, who had an outstanding record as both a fireman and executive, and later included Ross B. Davis in this purge because he stood for his Deputy Chief.

Showing the caliber of a real fighter and leader, Chief Simmler carried the fight to the Supreme Court of the state of Pennsylvania and was victorious. However, the Mayor used every means possible to withhold restoring both men to their rightful positions until, through relentless efforts, they slowly but surely proved their worthiness.

Today, Ross B. Davis is Chief Engineer of the Bureau of Fire, and William Simmler is Deputy Chief. They were restored to their previous positions, and I am sure this will be welcome news to the many fire executives throughout the United States, as our Chief has been recognized all over the country for his ability as a fearless and well-trained fireman and leader.

Chief Simmler is deserving of a vote of thanks by every fireman throughout the nation, irrespective of rank, because he sustained the power of Civil Service which grants every man the privilege of a hearing to show just cause why a dismissal should or should not be made.

I appreciate the splendid editorials and constructive fire information presented to the thousands of readers throughout the nation each month.

Very truly yours,
ALBERT H. REDLES,
Germantown, Pa.

Information Wanted Regarding Old Apparatus

To the Editor:

I recently was advised that you were interested in old fire engines. This came through a letter from Greencastle, Pa., regarding an old fire engine which the Rescue Hose Co. No. 1 have there. I am enclosing a photo of a fire engine known as Deluge No. 1. We have discussed this engine quite a bit with Jerome Irving Smith, of the Museum of the City of New York. From its outward design and inward construction, Mr. Smith is of the opinion that it was one of the two which were purchased by the City of New York in 1731, although he says that he could not say definitely as its history has been lost. There is one in the Firemen's Home in Hudson, N. Y. which was one of the two which came to New York in 1731 from Richard Newsham, of Cloth Fair, London, England. Its construction is identical, except for size, with the one we have here, known as Deluge No. 1.

We were informed that Judge Duane, who, I believe, was Mayor of New York, brought this engine to Schoharie County, when he settled the territory from

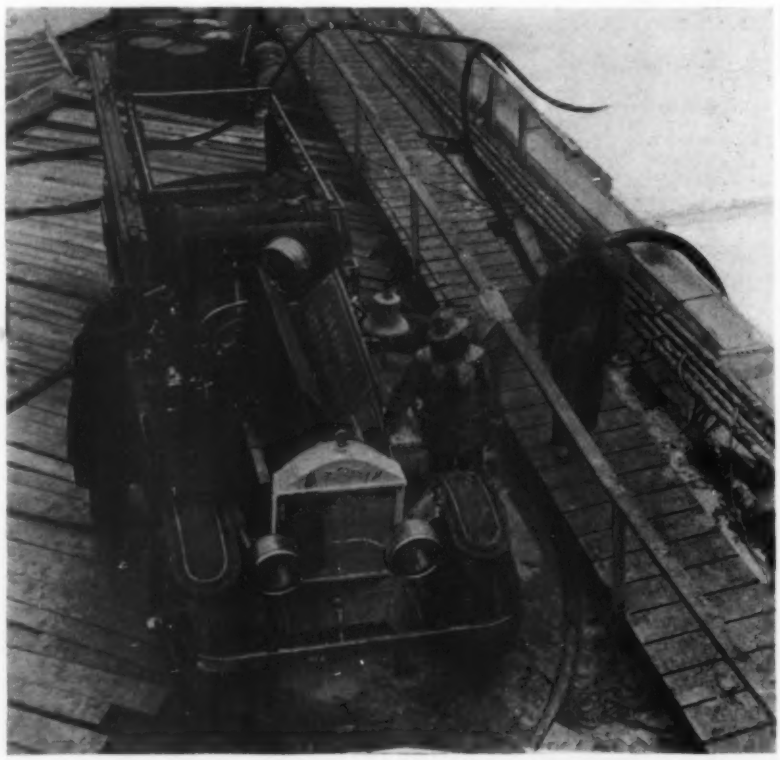
(*Continued on page* 459)

Facts About Kaolin Mine Fire

On the night of April 24, the Macon Fire Department was called to a suburban town about fifteen miles from Macon, in response to a fire at the Georgia Kaolin Mines, as mentioned in the August issue, FIRE ENGINEERING, page 365.

Only one pumper was sent, a 750-gallon American-LaFrance type, and this was forced to draft water from three chalk vats.

The engine, with all the chalk water flowing through at capacity, fed three lines, and the mixture did not so much as cake the gates, valves, or gears, and did not even stall the first time. The $1,000,000 plant was given up for a loss, but this one company saved about two-thirds of the entire buildings. This engine pumped chalk water for over twenty-six hours.



Drafting Water at the Georgia Kaolin Mines Fire

FIRE CHIEFS

You recognize our standing in the fire pump field.

Recognize, also, that you have inspired our progress.

We serve you with a complete line of rotary and centrifugal fire pumps and pumping units.

SPECIFY HALE

Write today for the Catalog and Folders on the Complete Line of Hale Pumps.

HALE FIRE PUMP COMPANY

708-716 Spring Mill Avenue

CONSHOHOCKEN, PA.

UNION MADE

Signal FIREMEN'S UNIFORM **SHIRTS**

Styled Right—Priced Right

"Simpson's Soulette"

Navy Blue Sanforized Poplin. Will not shrink or fade. Cut full and roomy. Coat style, white pearl buttons, two buttoned-thru bellow pockets, pleated sleeves. Buttoned-thru attached collar.

Regulation with Chicago Fire Dept.

(Made in other styles and materials)

SPECIAL OFFER

to Fire Chiefs

If you are interested in a standardized uniform shirt for your department and your dealer cannot supply Signals, write us. Give us size and style preferred and we will submit a sample shirt prepaid for your inspection and quote prices.

JOHN RISSMAN & SON

SIGNAL SHIRT DIVISION

305 W. Adams St. Chicago, Ill.

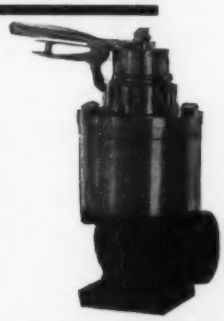
If not obtainable at your local store we will advise you of nearest dealer.

ROSS VALVES

The HOSE VALVE

Ross hose valves protect your men, lines and apparatus from any shock due to the pump or shutting down of streams. They maintain any desired pressure (up to 250 lbs.) at the nozzle.

For use on high pressure fire hydrants, standpipes in tall buildings, and on motor-driven fire apparatus. Hose threads to specifications.



The RELIEF VALVE

modernizes old pumpers and makes new ones better. Sure protection against shock when starting pumps or shutting off hose nozzles. A protective heating jacket, connected to either radiator of the engine or the exhaust pipe, prevents freezing. Pressure range to 300 lbs. — capacity, 1000 g.p.m. Also high pressure valves up to 750 lbs.— capacity, 1400 g.p.m.

Send for the Ross bulletins

ROSS VALVE MANUFACTURING CO.

TROY, N. Y.

YOUR BADGE OF HONOR

Something more than a decoration . . . an insignia of courage and unselfish devotion to duty. That badge should be worthy of its place on your uniform . . . let it radiate quality and your pride in wearing it. BRAXMAR has been making badges for more than 60 years.

C. G. BRAXMAR CO., 242 West 55th Street, New York

BRAXMAR BADGES

Standard for Over Sixty Years

BETTER THAN-AVERAGE QUALITY AT VERY LOW PRICES.

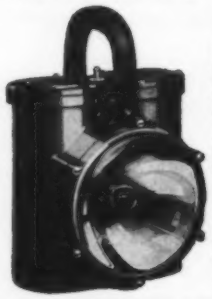
A LEGITIMATE FIRE DEP'T. BUYS AT JOBBERS' FIGURES.

SINCE I STARTED BUYING STEMPEL TRADE MARK REG.

Fire Extinguishers and Recharges.
All Types of Fire Hose.
Chemical Engines, Hose and Parts.
Bunker Suits.
Special Rubber Boots and Coats.
Fire Dep't. Brass Goods.

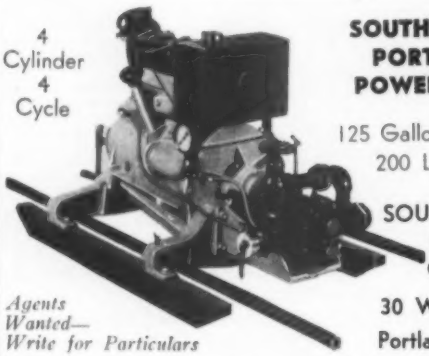
Write us today. M. L. SNYDER & SON
JASPER AND YORK STREETS PHILADELPHIA, PA.

HARRIS BROS.
MFG. CO., DAYTON, OHIO



Pioneer manufacturers of the original Fire Dept. hand electric searchlights and quality Fire Dept. supplies. Write direct for latest complete catalog and prices.

4 Cylinder 4 Cycle



SOUTHWORTH PORTABLE POWER PUMP

125 Gallon Capacity
200 Lb. Weight

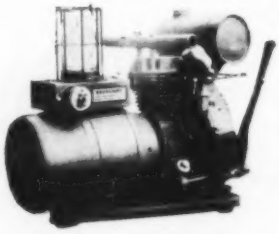
SOUTHWORTH MACHINE COMPANY
30 Warren Ave.
Portland, Maine

Agents Wanted— Write for Particulars

FLOODLIGHT with KATOLIGHT

portable light plants, 4 cycle, 600 watts, 60-cycle AC 110-volts. Also charge 6-volt battery from same plant. Runs electric drills, saws, etc.

Sizes 350 to 10,000 Watts



Write to
KATOLIGHT
105 ELM STREET
MANKATO, MINN.

GRISWOLD FOGNOZLS

Largest Exclusive Manufacturers of FOG NOZZLES

Accepted by hundreds of fire departments everywhere. Knocks down large heat areas and protects personnel.

Also Fognozls for booster lines, auxiliary tips on shut-offs, applicators in sizes from 2 feet to 30 feet.

Send for descriptive literature.

THE FOG NOZZLE CO.
1520 East Slauson Avenue
Los Angeles, California

THE NEW 4-A DU-AL
STRAIGHT-STREAM, FOG and SHUT-OFF

BADGES
FOR EVERY CITY DEPT.

Special Service Awards
CUPS—TROPHIES—WATCHES—RINGS
Estimates Cheerfully Furnished

JOHNSON - NATIONAL INSIGNIA CO.
Est. 1894
314 West 14th Street
New York City

BUY YOUR CAPS FROM FIRE DEP'T. CAP HEADQUARTERS

WENTWORTH FORMAN CO., Inc.

Manufacturers of
UNIFORM CAPS and SUPPLIES
578 WASHINGTON ST. BOSTON, MASS.
Fireman Cap Specialists for 44 Years
Write for latest catalog and prices

Refer to the
"WHERE TO BUY" SECTION
Page 477

Losses Cut at Lewiston

(*Continued from page* 402)

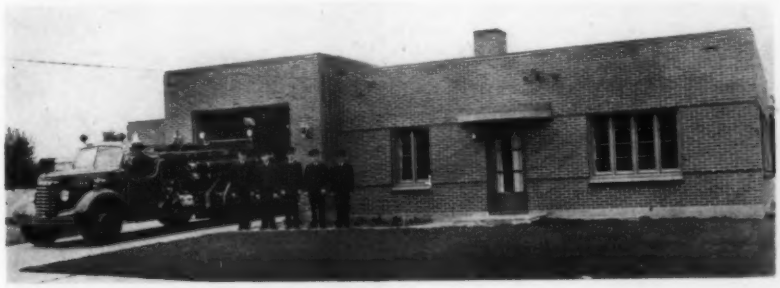
of these men can take charge and carry on.

With the improvements, which include new equipment, the city of Lewiston has built up a fine fire defense. The Idaho Surveying and Rating Bureau are soon to make a survey of the city, after which it is fair to assume that the city will receive its just rating credits. About the first of the year, half of the penalty was removed, and on the first of July the other ten per cent was lifted.

This demonstrates very clearly just what any city with a bad loss record can do, if it has the desire and determination. The following chart of fire losses, covering a period of over three years, will give an idea of the very encouraging results:

1936	$189,645.00
1937	49,689.68
1938	87,174.11
1939 (first six months)	9,741.95

Although in years gone by the heavy fire months have been January, February and March, during 1939 the loss during these three months was nil.



Engine No. 2 of Lewiston, Ida.

Football Players Make Good Firemen

Football players make the best firemen, if results of examinations given applicants for jobs in the Tulsa, Okla., fire department are an indication.

Out of 287 applicants, three of the five who scored highest were former University of Tulsa football stars.

In the photo, they are (front row, left to right): James Wickersham, Gailord Sartain and Tack Dennis. In the rear, also among the first five, are Raymond A. Lollar and William Schram. Standing in the doorway and "calling the signals" is Chief Raymond Granger.

The first vacancies in the fire department will be filled with these five applicants. The tests, both mental and physical, were modeled after the U. S. Marines examinations.

New Material for Tulsa, Okla., Fire Department

Correspondence

(*Continued from page* 456)

Esperance to Duanesburgh on U.S. Route 20. As you will note there is no suction hose, the water being poured into the body with pails. The nozzle is believed to be the original one. A Newsham pumper in the Franklin Institute in Philadelphia is dated 1735, but is of a later design, as the front part of the body is higher, permitting the wheels to turn under it.

From your observations of the photo what would be your opinion as to its date of manufacture, as compared with others of known dates? Have you ever seen anything similar to this pumper?

I understand that New York City organized its first Fire Department with the arrival of the two fire engines from England in 1731. One was known as Engine No. 1 and possibly was Deluge No. 1, as no doubt this was a Deluge, as compared with bucket brigades of the past. Did the first fire engines in America come from England before they were made locally? What is the earliest record of any fire engine coming to this country?

Deluge No. 1, Now Resting in a Museum

One striking resemblance between this engine and the one in the Firemen's Home is the construction of the pressure bell. Attached to the neck, between the bell and the nozzle joint, is a bar, which at some time was intended to be fastened to a horizontal strip of wood in the housing around the bell. This is on both pressure bells, but is not in use on either one. It seems that by chance this was used on an earlier fire engine built by Newsham. It is a definite indication that the two engines were built by the one and same person, Newsham and no doubt at the same time.

This fire engine is now in the Old Stone Fort Museum, and if you are up this way, you would find it interesting. There is also another fire engine there known as Niagara No. 6, purchased originally by the City of Albany, in 1863 and sold in 1868 to Schoharie.

Sincerely yours

EDWARD SCRIBNER,
Secty., Niagara Engine Co. No. 6.
Schoharie, N. Y.

Firemen Rush Aid by Plane

A CCC boy, at a camp near Brownsville, Tenn., became strangled while swimming with his companions. Chief Klinck and Capt. Vanderford, of Brownsville, answered the call for an inhalator, by plane. The trip was in vain, as the boy was beyond recovery.

Henderson to Buy Apparatus

A recommendation that new fire-fighting apparatus be bought for the Henderson, N. C., Fire Department was made to the city council recently, and the report adopted. The city will spend $12,500. D. G. SPENCER.

By William Paul Babcock

"That House Not Made with Hands, Eternal in the Heavens"

That mild mannered, even tempered gentleman, Robert H. Lockwood, whose duty it was over these many years to edit this writer's copy has, I believe, merely changed his place of abode, as above indicated.

In further reference to Minneapolis Fire Department and salvage work I might say "I told you so!" I did at least say that my correspondent Capt. Griesgraber was not readily identified as a member either of the Fire Department or the late Fire Patrol.

Now I have a very nice letter from Chief Earl E. Traeger, of the Minneapolis Fire Department, stating that not only is my correspondent not a member of either outfit but he has spoken without official status.

So, although the retiring commander of the erstwhile cover throwers did not favor me with desired information, Chief Traeger is more obliging.

Says he, "Salvage work was performed by this Department before 1933 when I became Chief, in the districts not covered by the Insurance Patrol." After the latter time, Chief Traeger further developed the service, co-operating strongly with the patrol.

"There is no question," says Chief Traeger, "in my mind or that of any other city official that it is the duty of the municipality or the fire department to protect property . . . from water damage, *and* (the italics are mine) *we are not concerned as to who recives the most benefit from salvage service our department performs.*"

The valiant Chief relates the following further interesting facts. He took over approximately 500 covers from the old patrol, which, added to what they already had, makes a total of 650. All ladder and rescue companies carry ten covers, combination or "quad" units twelve each, and other engines two each. Two of the former patrol trucks are maintained fully equipped with fifty covers each. The balance are held in reserve, equally distributed among the departmental districts.

Well, it sure was good to get Chief Traeger's letter. I really couldn't believe that the previous information was authentic. Again I point out that if my readers would be less backward about telling me what they know and do, I wouldn't have to use unverified items to fill up my column.

So, come one, come all, step right this way, line forms on the right, and please tell me what good salvage work you have been doing.

In other words, R. S. V. P.

Fire Department Praised

Chehalis, Wash., recently had a quarter of a million dollar lumber mill fire. In commenting upon the work of the Fire Department, the "Chehalis Advocate" said:

"A quarter of a million dollar loss is a tremendous loss to be sustained by any community, large or small, but there was a small group of men who stood Tuesday night between that loss and one that might have been several times larger.

"Chehalis owes a huge debt of gratitude to her fire department.

"Chief Ernie Kuehner and his men turned in a great piece of work Tuesday night.

"They not only stood their ground during the long hours of the night but they knew what to do all the time.

"Those who watched the mammoth wall of flame lighting the sky for miles are still wondering why the balance of the Palmer Mill, the canning plant and several houses didn't go also.

"In fact, plenty of people are wondering why the whole down town district didn't go up in smoke.

"Incidentally, a 'Thank You' is due the city commission for providing fire-equipment. We recall there was a little criticism at the time of the purchase of the last pumper. That piece of equipment paid for itself many times over Tuesday night.

"Adequate fire-fighting equipment costs money and the investment seems large many times, but in an emergency such as faced Chehalis Tuesday night, the investment seems small indeed.

"Chehalis could very easily have been dealt a far more serious blow than a quarter of a million dollars Tuesday night.

"The margin was far too close for comfort. Thanks go to firemen for their splendid work, and city officials for providing them with proper equipment."

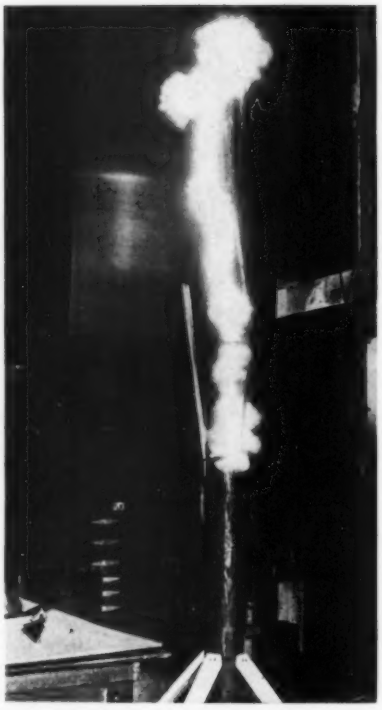
Salvage-Pumper in Service at Lansdale, Pa.

A type 45 Mack salvage-pumper, the first of its kind to be built, has been delivered to the town of Lansdale, Pa. All the space is utilized for closed cabinets, and each cabinet is marked to indicate its contents.

The truck has a 200-gallon booster tank and auxiliary hose lines, and a 200-gallon pump. It will carry a flood-lighting system with two 500-watt and one 250-watt spotlights.

The unit can carry eleven men—three on the driver's seat and eight on a double row of seats which are in the body.

New Type of Apparatus Delivered to Town of Lansdale, Pa.



Man-Made Lightning Demonstrated

During a demonstration of a lightning surge generator, a flash of electric current of more than 3,000,000 volts, shattered a transmission pole and ignited it. Note the cloud-like formation playing about the pole, tracing the path of the lightning stroke.

Chief Belcher, Winthrop, Retires

The Contributory Retirement Law in Massachusetts ended a 30-year service of Chief Warren H. Belcher of Winthrop. A number of other town employees were retired at the same time.

William A. Floyd has been appointed to fill the vacancy.

This law has recently affected a number of Massachusetts chiefs.

FIRE CHIEF
FIRE DEPT
FREE

1 Set "Fire Chief" Signs

With an order of 5 Sets or more

"Fire Dept." Signs

RED BACK GROUND WHITE LETTERS

Avoid delays with FIRE DEPT. signs on your cars. Size 3½ inches by 11 inches.

Easily readable at night. Prices and Terms:

1 Sign only	$0.75 each
1 to 9 sets inclusive	1.25 per set
10 to 19 sets inclusive	1.20 per set
20 to 29 sets inclusive	1.15 per set
30 to 39 sets inclusive	1.10 per set
40 to 49 sets inclusive	1.05 per set
50 sets or over	1.00 per set

The above prices are F.O.B. Sacramento, plus such sales tax or Federal tax as is required by law. Terms in all cases will be cash unless sold to City, County or incorporated Fire Departments or Districts.

Postage Free if payment sent with order.

CAPITAL FIRE EQUIPMENT CO.

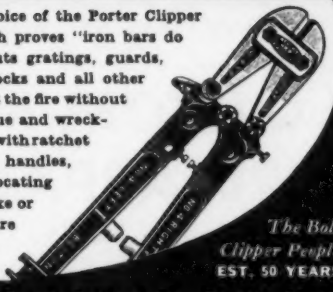
1014—28TH STREET SACRAMENTO, CALIFORNIA

IN THIS BOOK

Clippers to cut steel as thick as your thumb — big powerful tools for heavy wrecking jobs. In-between sizes to fit every need. Special tools for cutting cable, flat stock, etc. Swivel head models — the "wrist action" tools which reach around corners at all angles. This catalog covers the entire Porter line. Tells about hardness of metals and the right cutting tools. It is yours for the asking

PORTER Cutters

Here is the fireman's choice of the Porter Clipper line — a giant tool which proves "iron bars do not a prison make". Cuts gratings, guards, heavy cable, bolts, padlocks and all other obstructions to getting at the fire without delay. Invaluable in rescue and wreckage work. Special models with ratchet attachment for closing handles, with search hook for locating and cutting wires in smoke or darkness, etc. Used by fire departments everywhere.



The Bolt Clipper People
EST. 50 YEARS

H. K. PORTER, INC., 12 Ashland St., Everett, Mass.

Every Fire Department Officer Should Have—

SIMPLIFIED FIRE DEPARTMENT HYDRAULICS

A 200 page book, fully illustrated, by Fred Shepperd, Editorial Director of FIRE ENGINEERING.

A complete course of instruction in fire department hydraulics. Designed to prepare fire department officers for hydraulic questions in examinations, such as required of all ranks.

Contains over 150 problems in fire department hydraulics asked in examinations in New York, Chicago, Milwaukee, Seattle, Newark, and a score of other large cities.

Treats fully all departments of fire department hydraulics, including pressure calculations, friction loss, engine and nozzle pressures, range of streams, capacities of engines, discharge from nozzles, hydrants, sprinklers, etc., etc.

Price—$2.00 Postpaid

Book Department

FIRE ENGINEERING

24 West 40th Street New York, N. Y.

The **JANESVILLE FIRE COAT**

- Finest quality pure gum rubber on heavy black fleece
- Corduroy collar
- Raglan sleeves
- Storm flap
- Seams taped on the outside—absolutely waterproof
- Detachable all-wool innerliner available at low cost

Also WATERPROOF DUCK COATS

Lined with Rubberized Airplane Cloth, no moisture can penetrate to body. With or without detachable all wool innerliner.

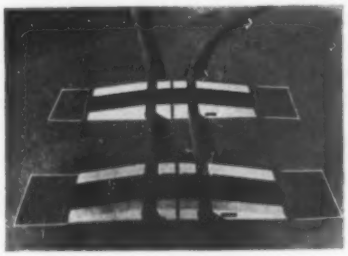
More and more firemen are switching to Janesville—no finer coat made—built for hard service and available to members of any paid fire department on open account.

Write for illustrated folder describing Firemen's Coats, Bunkers, Boots, etc.

JANESVILLE APPAREL CO., Janesville, Wis.

MINUTE MAN Hose Bridges

Let traffic go through and protect hose lines



Hose cannot become pinched or scuffed; bridge held in place by friction grip — it cannot slide; flexible, it conforms to road contour; folds for compact stowing; folded, it forms block for climbing curbs, and it COSTS LESS THAN THE HOSE IT SAVES. Write for folder giving all details and prices.

TAYLOR MFG. CO.
Lexington, MASS.

POWERFUL 76-OUNCE LIGHT FOR FIREMEN

Battery Non-Spillable, Non-Corrosive, Rechargeable

25,000 c.p. searchlight beam with ¼ mile range and a less powerful service semi-flood light.

Will give 20 hours continuous light on service filament or 8 hours on the high power filament on one battery charge . . . much longer with intermittent use. Spare battery inserted in 10 seconds. May be carried on shoulder strap or in hand. Send for bulletin illustrating 20 Master-Lights of from 25,000 to 250,000 c.p. intensity for all firemen's uses. Sent on approval on chief's order.

Type G-23

CARPENTER MFG. CO.
179 *Sidney St.,* *Cambridge, Mass.*

CAYASLER MFG. CO.
1546 WILLIAM ST., BUFFALO, N. Y.

CUSTOM-MADE FIRE APPARATUS

ALSO

FIRE HOSE - FIRE DEPARTMENT SUPPLIES

WORSTAL BADGE WORKS NBW COLLINGSWOOD, N.J.

P. O. BOX 223

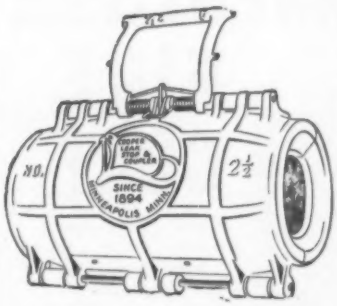
Popular and New Design Badges in the lower price range.

◆

1940 Catalogue now ready

COOPER HOSE JACKET CO.

Announces



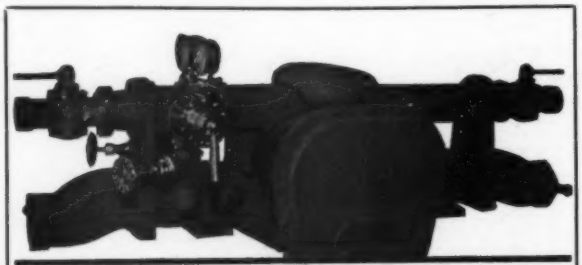
the addition of a new 1½" hose jacket to complete their line. It fills the need for a jacket to fit 1½" hose which is becoming standard with most major fire departments.

NEW PRICE LIST FOR 1939

1½", f.o.b. $40 Liners, $10.50
2½", f.o.b. $45 Liners, $10.50
3", f.o.b. $55 Liners, $15.00
3½", f.o.b. $65 Liners, $20.00

DISTRIBUTION POINTS

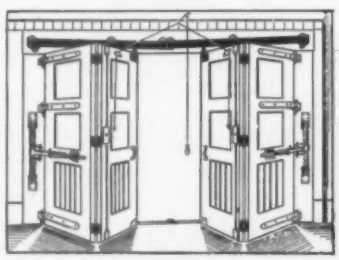
East: Elkhart, Ind.
Northwest: Minneapolis, Minn.
West Coast: Los Angeles, Calif.



NORTHERN PUMP COMPANY
ESTABLISHED 1907
MINNEAPOLIS, MINN.

LOEFFLER FIRE STATION EQUIPMENT

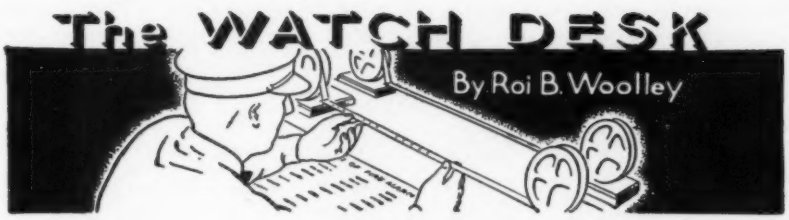
Automatic Door Openers
Sliding Poles
Metal Sheath
Well Hole Doors
With Spring or Electric Openers
Electric Hoist for Hose Tower



WRITE US TODAY

J. M. LOEFFLER
132 N. FOURTH STREET - PHILADELPHIA, PA.

Refer to the
"WHERE TO BUY" SECTION
Page 477



Our inquiring reporter overhauls the firemanic news of the day

Not an Embarrassment!

In this department in the August issue, the new streamlined ladder truck at Swissvale, Pa., was referred to as an "$11,997 Embarrassment," for it was alleged that it could not turn into many of the narrow streets. However, extended tests show the truck is capable of navigating all corners except one. In this case it is held that even a milk truck could not negotiate the turn.

Fire Truck Inaugural Spoiled

For months, the Vamps of Mosquero (N. M.) waited for a chance to try out their nice new truck at a blaze. Came the alarm and all hands responded on the button. One after another they took turns at winding up the motor—but 'she' refused to percolate. After what seemed hours of cranking somebody discovered that some miscreant had purloined the gasoline. Meanwhile the old Drake farmhouse burned to the ground.

Bring on Your Fires!

Quite a coincidence: This month two correspondents send us accounts of two widely separated cases where obliging folks brought the fire to the firemen. The first comes from Youngstown (O.), where one day an auto horn sounded insistently outside Station No. 11. When the Braves emerged to see what's what, they saw a motorist leap from a smoking car and dash away, shouting as he fled, that the back seat was afire—and that he was late for work. The Braves made short work of the fire and wondered if they had been made a gift of a car. But no, eight hours later Joe Yasechko, steelworker, his day's work over, returned to claim his car—and give thanks.

The second yarn is about Pennsylvania Railroad freight crews that likewise delivered a fire to firemen. Seems that when the blueshirts were unable to extinguish a fire at the end of a wooden milk car on a Broad Street station siding, they were told to meet the burning car at 31st and Chestnut Streets, several blocks away. Two engines (not fire engines, gentle reader) took the burning car through the 30th Street Station and a tunnel to Chestnut Street, where it was easy for the waiting Braves to kill the fire. The car contained 3,000 gallons of milk.

Hot Off the Tape

Wayward Press of July 24 reported a World's Fair (N. Y.) "fire casualty," which "casualty," it developed, was an attendant who got smoke in his eyes squirting an extinguisher on a street wastebasket fire. . . . When 80-year old Henry Adelsky fell outside sixth story window of Home of the Daughters of Jacob (Bronx, N. Y. C.) he hung, nude, for twenty minutes suspended five stories above ground, his foot impaled on a spike, before police and firemen rescued him. . . . Socialite week-end guests of Mr. and Mrs. Charles Bromley, Edgemere (Pa.), left dinner in rush and formed mop brigade to fight forest fire that threatened Bromley home. . . . Court of Peace at World's Fair (N. Y.) was anything but peaceful when teams of Fire and Police Departments pummelled, pushed and pulled one 'nother all over place in game of pushball. Score ended in tie—and plenty "shiners." . . . In Wilkes-Barre (Pa.), Joseph Manganna started married life courageously. When a candle ignited his bride's veil during ceremony, Manganna ripped it off, stamped out flames and ceremony was resumed. . . . Mrs. Margaret Taye, 50, Mount Vernon (N. Y.), died from burns received when clothing and hair caught fire while she was lighting cigarette. . . . They do it in Sweden too! Erik Soederberg, fireman son of Fire Chief of Soederhamm (Sweden), confessed to starting eight fires to win prizes for being the first fireman to get to blazes, his pals praised his courage, saying he'd risked life to save persons endangered in fires he is said to have set. Now ain't that nice! . . . Tragedy to 800 under-privileged children and their mothers aboard the Lloyd J. Seaman, floating hospital of N. Y. City, owned by St. John's Guild, was averted when it was discovered just in time that gasoline had been mixed with oil for boat's diesel engines (used for lighting and ventilation). Police and firemen were jittery until they located boat in Hudson River. . . . Waldo Clemmons, 26, prisoner in jail at Bonner Springs (Kan.), was burned to death as fire damaged city jail. . . . Four oil fire "putter-outers," experts of Houston, Tex., expecting to fly to Arabia via the Atlantic Clipper to extinguish bad oil fire, canceled their reservations when word came that fire was out. . . . The American tanker "Associated" saved 210 from burning Jap liner Bokuyo Maru, 1,100 miles east of Yokohama. . . . Watching a 26-ton dynamite blast, a boy was killed, 18 injured, 14 railroad cars wrecked, when charge went haywire. . . . Five barrage balloons on test at English airdrome went "pfut," came down in flames, after being struck by lightning.

Fire Trucks Rush FROM Blaze

Assistant Chief Ed. Erbland, Ridge Culver Fire Department, town of Irondequoit, a suburb of Rochester (N. Y.), sends us story about fire that came home to roost at the building housing the Ridge-Culver Vol. Fire Assn. Seems that flames were discovered by one Norris Platt, local Vamp, who was returning home from night job in Rochester. Seeing smoke coming outa structure, Platt unlocked the door crawled on his tummy to reach phone, where he summoned Laurelton and Mt. Pleasant Braves and Assistant Chief Ed. Erbland. Platt then drove out the company's two trucks—one a new'un. Damage estimated at 'round $2,000 'tis said. Orchids to Brother Platt.

You City Fellers Listen!

Some hay pitchers, and milkers are the local fire gentry in the Warren County (N. J.) hills. For 12 sweating hours, 100 Vamps worked to point of exhaustion, as fire smouldered at bottom of hay mow in $20,000 barn, near Hackettstown (N. J.). They pitched 65 tons of hay. Saved barn and 120 tons of hay stored at t' other end. When fire broke out 60 cows turned loose hadda be milked, so they herded 'em back into smoke-filled barn and milked 'em. Braves had to lay 2,500 foot stretch to brook for water, when eels clogged up suction of pumper, they weeded 'em out and kept steaming ahead. Most of hay burst into flames, as it was removed from barn and was rushed into a field to burn itself out.

Rates Cut in Warsaw

Lower fire insurance rates have been granted farm dwellings in Warsaw, N. Y., because of a cover-in system by which apparatus from another station covers in if units from the central station are out.

New Officers for Michigan Firemen

Frank W. Kuhn, Pontiac, Mich., was elected President of the Michigan State Firemen's Association at the Bay City Convention.

Other officers elected were: Harry C. Crumb, Bay City, and J. Frank Van Atta, Kalamazoo, Vice-Presidents; George F. Dansbury, Grosse Point Farms, Secretary; and Donald D. Post, Ferndale, Treasurer.

Two Enjoying the Convention
Harry C. Crumb, Host to the Convention; R. A. Cornwall, Kerotest Manufacturing Company.

Trustees elected were: Claude Craig, Owossow, three-year term; Chris Smith, Muskegon, two-year term; and Frank W. Bender, Jr., Saginaw, State Vice-President, I.A.F.C.

Among the Fire Fans

By Otis Smith

BOX 13 Associates, Cincinnati, Ohio, recently were awarded cards for completing Red Cross First Aid instruction. Lieut. Irwin Martin of the Fire Department conducted the course. There are thirteen members in Box 13. Two members are Judges in Cincinnati Courts, one is a member of the Legislature, and the remainder are business men.

Chief Ralph E. Morrison says that the Fire Department is so efficient that Box 13 men have very little to do with actual fire fighting. They do attend all multiple alarms though for the purpose of distributing coffee and sandwiches, and spreading salvage covers. All members carry complete first-aid equipment in their cars, several carry H & H Inhalators and Burrell masks.

Box 13 also gives dinners four times a year in the different engine houses, to which ranking city officials are invited, and visiting Chiefs from surrounding cities. They also conduct fire prevention campaigns with the department and Chamber of Commerce.

The Phoenix Society, San Francisco, assigned the Phoenix Society Meritorious Award for exemplary service to Captain Willis E. Gallatin. Capt. Gallatin, a veteran of forty years of fire service, is Drillmaster of the San Francisco Fire Department.

We note that the *Phoenician News* is somewhat small this issue, but then, so is this column. With vacations just ending, it is rather difficult to find enough in any club to write about. The brisk months ahead should bring plenty of news as the buffs will have plenty of rolling to do.

Jimmie Johnson, Oswego's lone-wolf, writes that he has recently returned from Columbus, Ohio, where he gave the local department a thorough inspection. Jimmie is still receiving letters from other fire apparatus model builders. He will be glad to hear from any who care to write. His address is 147 E. Cayuga St., Oswego, N. Y.

Not content to merely watch them go to work, we recently joined (as an associate) a newly organized volunteer fire company just across the city line from where we live. This new fire company supplies fire and ambulance service to a large and growing community. So far, our riding has been confined to parades and drills; so we have yet to advance the "pipe" against an actual fire. And before we overlook it, the name of this organization is the Arbutus Volunteer Fire Department. Fire fans in the Baltimore area are invited to pay us a visit.

A fire fan group of Highland Park, Mich., has recently been dissolved. This was a small group known as the Thompson-Hurd Safety Division. Some of the members contemplate joining with some nearby fire fan club. This information is from Stuart Thompson, 119 Monterey Ave., Highland Park, Mich.

Fireman Leslie Hoertsch, Fire Sta. No. 1, Kenosha, Wis., says that he is receiving inquiries about fire pictures. Fireman Hoertsch carries a camera on the job and would be interested in hearing from others, firemen or buffs, who take similar pictures.

We have received a photograph, addressed to Gordon Mullins, care of this column. Mr. Mullins may be reached more directly by addressing photos to him in care of the Bell Club, 119 W. 33rd St., New York, N. Y. He has announced that he is willing to trade first class photographs of fire department interest.

And a few words in closing to readers of this column. The news you read in this monthly bit is all real, nothing is manufactured to fill space. Which is the reason why it is so short this issue. Now that we are entering the fire department busy season we are looking forward to a lot of fan club activities. Your letters make this column, so let's make it a big October issue.

The October issue of this column will close on September 29. Material received at Baltimore up to that date can be used in the October issue.

Cab-Over-Engine Aerial

At the conventions of the Eastern Association of Fire Chiefs in Atlantic City, N. J., and the New England Association of Fire Chiefs at Providence, R. I., one of the new American-LaFrance 4-wheel cab-over-engine type of aerial ladder trucks was demonstrated. The new design possesses many novel features.

Aerial ladders on the 4-wheel ladder truck are being furnished in lengths of 65 feet, 75 feet, and 85 feet. The ladders are built in three telescoping sections. Each section is fabricated of corrosion resisting, high tensile strength, cold drawn steel, by the atomic electric arc method of welding. The ladder is completely controlled by one man for all operations through a hydraulic power system.

These short wheel base, short overall length aerial ladder trucks possess high degree of maneuverability so essential in heavy or congested traffic areas, and for negotiating narrow streets. They can be housed in existing stations without rebuilding or enlargement, which is frequently required when an aerial truck is installed.

When equipped with a 75-foot aerial ladder, the overall length is only 40 feet-2-inch and with an 85-foot aerial ladder, the overall length is only 41-feet-10-inch, much shorter than the tractor-drawn 6-wheel type.

Either the 75-foot or 85-foot aerial ladder can be used for rescue work, or as a water tower, with the ladder fully extended at any angle, equalling the 6-wheel tractor drawn ladder truck for operating stability without such maneuvers as jacknifing the tractor.

One of these new modern 85-foot aerials has been recently purchased by Great Neck, L. I., N. Y. and one has also been purchased by Concord, N. H. Demonstrations of the 85-foot aerial ladder on the 4-wheel ladder truck have been made recently in several cities where an increasing interest is noted in this compact and efficient unit.

E. J. Cannon, Chief of Norfolk

E. J. Cannon has been appointed Chief of Norfolk, Va., Fire Department to fill the vacancy caused by the death of the late Chief R. S. Baughan.

Chief E. J. Cannon

Chief Cannon was appointed as a private in the department on January 29, 1906; Captain on July 28, 1909; Third Assistant Chief on January 27, 1920; Second Assistant Chief, February 27, 1922, and then Chief.

American-LaFrance Cab-Over-Engine Aerial

COVER'S
NOD and SHAKE
SMOKE MASK

Carry It in Pocket. Slip on in a Jiffy. Positive Protection to Eyes Against Smoke and saves the lungs.

Why get sick?

Price $48 per Dozen

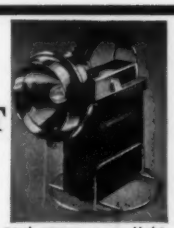
Upon receipt of $4.00 one will be forwarded as a sample, postpaid.

H. S. COVER
Station A, SOUTH BEND, IND.

Used by Boston Fire Department 10 Years

WHEAT SPOTLIGHT

25,000 Candlepower
2,500-Foot Beam

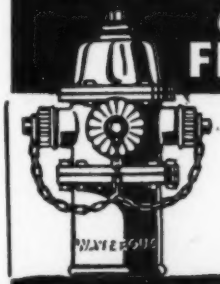


Costs less to operate than dry-cell lights and gives *more light*. Light does not fade; focuses at any angle. Shoulder strap permits use of both hands.
Burns 1,000 hours without battery replacement; recharged without taking apart. Spill-proof; weighs only 97 oz. Either Spotlight or Floodlight reflector.

DISTRIBUTORS WANTED—Desirable Territories Open

For Full Information Address
KOEHLER MFG. CO., Marlboro, Mass.

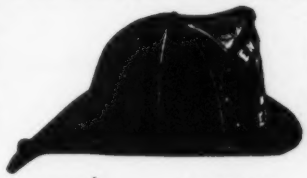
WATEROUS
COMPRESSION
FIRE HYDRANTS



Waterous Dependable
ESTABLISHED 1886

WATEROUS COMPANY - ST. PAUL

CAIRNS LOW HEAD— CUSHION LINED **HELMET**



COMFORTABLE AS YOUR OLD FELT HAT; WON'T SHAKE OFF

Never go to a fire without the protection of a good helmet. It may save your life.

DESIGN - - MATERIALS - - CONSTRUCTION
ALL PROVED RIGHT BY YEARS OF ACTUAL USE

Ask for Catalog 229

CAIRNS & BROTHER
444 LAFAYETTE STREET - Established 1836 - NEW YORK

HEWITT-GUTTA PERCHA
FIRE HOSE

A complete line, including
Wax Treated - Solid Multiple Woven
AND
Single and Double Jacket Hose

Manufactured by
HEWITT RUBBER CORPORATION
BUFFALO, N. Y.
"Territories Available"

DIAMOND BRAND

SALVAGE COVERS

ASSURE COMPLETE PROTECTION
REDUCE WATER DAMAGES

NEW and improved type—lighter in weight—easier spread—double cemented, water-tight seams—made to conform to the rigid requirements of New York City Fire Patrol and Newark, N. J., Salvage Corps.

SAMPLES AND QUOTATIONS ON REQUEST THRU YOUR LOCAL DISTRIBUTOR OR WRITE US

DIAMOND BRAND CANVAS PRODUCTS
Official Canvas Goods Manufacturers for Boy Scouts of America
Borden Ave. & 21st St., Long Island City, N. Y.

Refer to the
"WHERE TO BUY" SECTION
Page 477

EDDY
Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience goes into their manufacture and they embody valuable and exclusive features.

Write for the Facts
EDDY VALVE CO.
Waterford, N. Y.
James B. Clow & Sons, Chicago Agents

PROMOTIONAL STUDY COURSE

Herein is presented a series of definitions, questions and answers designed to aid fire department officers in preparing themselves for promotional examinations. In this department, which appears monthly, will be included questions typical of examinations held throughout the country.

Definitions

Transom: A beam over the opening for a door. Transom light is the glass window above.

Trimmer: A short cross timber framed into two joists to sustain the ends of intermediate joints. (Example: The trimmer in arch under hearth to prevent joists from entering the chimney breast.)

Unbroken Area: An area with no subdivision walls or fire-resistive partitions and where fire could have a full sweep.

Wainscot: A wood facing to walls in rooms, extending upward from the floor.

Well Hole: An opening larger than an ordinary light or ventilating shaft, piercing a series of floors for purposes of light and ventilation. (They are considered poor construction features. Their large areas make all floors practically gallery floors, and fires quickly spread from floor to floor.)

Zero: In the Fahrenheit scale, zero temperature is 32 degrees below freezing point, while in Centigrade it is freezing point. From freezing point to boiling point is 180° F.; it is 100° C.

Answers to Questions in Previous Lesson

1. (a) Of greatest importance in the preventing of fires in school is thorough inspection. Only by such inspection can conditions contributory to fires be prevented. Elimination of rubbish in basements, and of unnecessary combustible materials around heating plants, will contribute a great deal toward preventing fires.

As to protection of lives in school buildings, fire resistive construction is of greatest importance, for it alone will check the spread of fire and give the occupants of the building a chance to get out before the fire has spread to such an extent as to make egress impossible.

Wide aisles in rooms, broad halls, wide and gently sloping stairs and doors that swing out, are fundamental safety requirements.

The protection of vertical openings is generally advisable for three-story or higher schools that are not under sprinkler protection. Exits in the form of isolated stairways, separated from the building proper by fire walls, or else closed in with wire glass, are absolutely essential. Sprinkler protection is now being generally recommended for protection of school buildings.

Auxiliary fire alarm systems connected with street boxes are also of value in large school buildings.

Of great importance in preventing loss of life in schools is proper drills of the pupils. Such drills may be supervised by the fire department, or may be left entirely to the principal of the school, with full instruction as to carrying them out.

(b) In order to prevent fires and safeguard lives in department stores, thorough inspection, as in the case of school buildings, is absolutely necessary. There is a tendency for large quantities of packing materials and other combustibles to accumulate in department stores, particularly around the shipping rooms. Thorough inspection of the store will prevent accumulation of such rubbish.

Protection for Department Stores

All department stores should be equipped with sprinkler systems, covering all offsets, extensions, stairways, etc. Such stores should also be equipped with standpipes in stairwells, with sufficient hose to cover floor areas. Fire stops (brick walls with automatic fireproof doors at all openings) are of great benefit in preventing the spread of fire. Proper first aid fire appliances are necessary in order to promptly control incipient fires at the start.

Sufficient means of escape, both inside and outside building (fire escapes, towers, etc.), should be provided: Stairway and elevators to be in fireproof enclosure. The various exits should be distributed so that not too great a distance would have to be traversed to reach any such exit and all exits should be adequate for all employees and customers. Sufficient aisle space, with no counters or tables forming obstructions, should be permitted. All fibers in packing rooms should be carried in metal lined bins (fireproof receptacles), fireproof receptacles to be provided for all other waste products, and safety cans and proper containers for the storage of all volatile inflammable oils, compounds or combustible chemicals stored within the premises.

Fire brigade employees in the department store should be instructed and drilled in their duties, so that in the event of fire or panic, they will go without delay to their assigned stations, entrances, or exits, on stairways or stair landings, to assist those who have fallen and are being trampled upon, and to transmit alarm and direct people to near exits. Proper signs indicating exits, and same to be illuminated, are most essential. Also alarm system connecting all floors and direct communication with fire department. Prohibition of smoking as well as unapproved wiring. Proper disposal of waste materials from store.

2. The particular hazards involved in a wood working plant are as follows:

Improper construction or heating of caul boxes; improper collection and disposal of dust and refuse; improper construction and arrangement of shaving vaults; careless housekeeping; painting and varnishing hazards; improper construction and operation of glue pots; defective electrical wiring; presence of dust on rafters and other points of lodgment.

Inspection should include the following: that caul boxes are properly built and that lining is intact; that steam pipes are properly bushed where they enter caul boxes; that dust collector system is in operable condition, and that dust is removed as fast as created and not permitted to accumulate on floors, rafters or other ledges; that sawdust, dust, and other combustible wood waste products are properly disposed of either by confining to shaving vaults or else burning; that ducts carrying dusts are in good state of repair; that moving electrical apparatus such as motors, circuit breakers, etc., are kept free of dust; that painting and varnishing operations are safely conducted; that heating apparatus for glue pots is isolated so as not to cause explosion hazard from dust in air; that all wiring is done in a workmanlike manner, and no makeshift wiring present; that general housekeeping is of a high order.

Particular attention to be directed to the disposal of oily rags and waste in varnishing and painting departments; also that inflammable volatiles are kept in proper containers.

Life hazard: Inspection would make certain that exits are readily accessible, that doors are not locked, that there are no obstructions in aisles, stairways, or other passageways leading to such exits.

Usual inspection would be made of sprinkler and standpipe equipment.

3. False; 4. True; 5. True; 6. True; 7. True; 8. True; 9. True; 10. True; 11. True; 12. True; 13. True; 14. True; 15. True; 16. True; 17. True; 18. False; 19. True.

20. . . . inflammable contents.
21. . . . crumble.
22. . . . warp.
23. . . . crack, or chip off.

EDITOR'S NOTE: The next eight installments of this series will consist of miscellaneous questions, with answers thereto in the same issue.

Cumberland County, Me., Association Formed

A new organization known as the Cumberland County Firemen's Association was recently formed in Maine. The officers of the association are, Chief W. B. Smith, Freeport, President; Robert Nutter, Scarboro, Vice-President; Chief Henry Merrill, Falmouth, Clerk.

The object of the organization is to promote the good will of the various Fire Departments in the county, and to create a better understanding between departments, as well as to extend fire prevention and extinguishment methods in the county.

The organization holds its meetings on the third Thursday of each month, the place of meeting being set at the previous meeting. The towns in the county which have shown an interest in the organization up to the present are: Freeport, New Gloucester, Yarmouth, Scarboro, Gorham, Standish, Falmouth, and Cumberland. The next meeting will be held at West Falmouth, and an interesting program has been arranged.

J. W. RANDLETTE.

Convention Dates

Sept. 11-14—COLORADO STATE FIREMEN'S ASSOCIATION. 28th Annual Convention, Tournament and Fire College, Longmont, Col. Secretary, Clinton Turnbull, 215 Boston Bldg., Denver, Col.

Sept. 14-16—LOUISIANA STATE FIREMEN'S ASSOCIATION. 34th Annual Convention, Evangeline Hotel, Lafayette, La. Secretary, Edward Wright, Houma, La.

Sept. 18-19—PACIFIC COAST ASSOCIATION OF FIRE CHIEFS. 46th Annual Convention, San Francisco, Cal. Secretary, Jay W. Stevens, State Fire Marshal, Merchants Building, San Francisco, Cal.

Sept. 19—NEW HAMPSHIRE STATE PERMANENT FIREMEN'S ASSOCIATION. Regular Meeting, location to be specified by President. Secretary-Treasurer, Tom L. Kellogg, Box 714, Manchester, N. H.

Sept. 20-23—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. 67th Annual Conference, Empire Hotel, San Francisco, Cal. Exhibits and Meetings, Municipal Auditoruim. Secretary-Treasurer, Ex-Chief James J. Mulcahey, 16 Franklin Ave., Yonkers, N. Y.

Sept. 26—FAIRFIELD COUNTY FIRE CHIEFS' EMERGENCY PLAN. Next Meeting, New Fairfield, Conn. Secretary, Captain John Moehring, Toms Road, Stamford, Conn.

Sept. 25-28—CALIFORNIA STATE FIREMEN'S ASSOCIATION. 17th Annual Convention, Monterey, Cal. Secretary-Treasurer, Harry E. Strasser, P. O. Box 513, Beaumont, Cal.

October, 1939—ARKANSAS STATE FIREMEN'S ASSOCIATION. 18th Annual Convention, Eureka Springs, Ark. (Exact date to be announced later.) Secretary-Treasurer, H. D. Compton, Little Rock, Ark.

Oct. 2-5—FIREMEN'S ASSOCIATION OF THE STATE OF PENNSYLVANIA. 60th Annual Convention, Erie, Pa. Secretary, Chief Charles E. Clark, Box 217, Wayne, Pa.

Oct. 3-6—KANSAS FIRE COLLEGE. Annual Fire College, University of Kansas, Lawrence. Director, Fire College, Dean, Harold G. Ingham, University.

Oct. 4-6—TENNESSEE FIREMEN'S ASSOCIATION. 9th Annual Convention, Jackson, Tenn. Secretary-Treasurer, Joe J. Martin, Nashville, Tenn.

Oct. 9-12 — INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. 44th Annual Convention, Biltmore Hotel, Providence, R. I. Secretary, Irvin Shulsinger, 7 East 42nd St., New York City.

Oct. 16-18—SOUTHWESTERN ASSOCIATION OF FIRE CHIEFS. 30th Annual Convention, Dallas, Texas. Secretary-Treasurer, Chief J. Ray Pence, Stillwater, Okla.

Oct. 16-21—ALABAMA STATE FIREMEN'S ASSOCIATION. 4th Annual Convention and Fire College, Florence, Ala. Secretary, George E. Crossett, 1916 Sixth Ave., North, Birmingham, Ala.

Oct. 17-19—ILLINOIS FIREMEN'S ASSOCIATION. 52nd Annual Convention, Kankakee, Ill. Secretary, Asst. Chief Roy W. Alsip, Champaign, Ill.

Oct. 17-19—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. 58th Annual Convention, Kearney, Neb. Secretary-Treasurer, Louis A. Novak, Norfolk, Neb.

Oct. 18—FIRE CHIEFS' EMERGENCY PLAN of Westchester County. Next Meeting, Mamaroneck, N. Y. Secretary, Capt. Howard Gear, Fire Headquarters, Rye, N. Y.

Oct. 24-25—INDIANA ANNUAL STATE FIRE SCHOOL. 6th Annual School, Purdue University, Lafayette, Ind. Director of Education, Emmett T. Cox, Fire Marshal's Department, State House, Indianapolis, Ind.

May 21-24, 1940—IOWA FIRE SCHOOL. 16th Annual Fire School, Iowa State College, Ames, Ia. Director of College, Prof. Lindon J. Murphy, University.

May 25, 1940—IOWA FIRE CHIEFS' ASSOCIATION. 12th Annual Meeting, Ames, Ia. Secretary-Treasurer, Chief L. R. Morris, Ames.

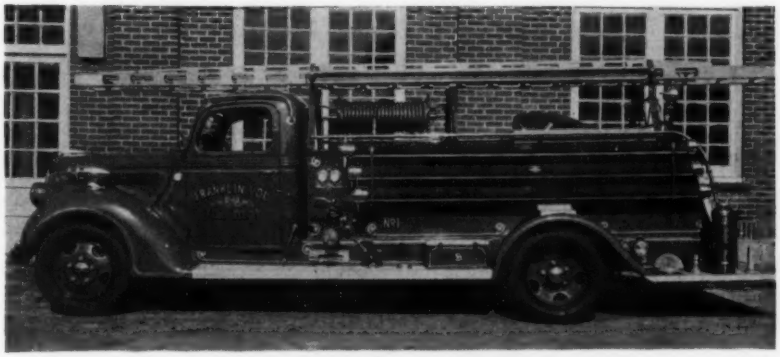
*June 11-14, 1940—ILLINOIS FIRE COLLEGE. 16th annual fire college, Illinois Firemen's Association, University of Illinois, Champaign-Urbana, Ill. Prof. L. H. Provine, Director of School. Roy W. Alsip, Champaign-Urbana, Secretary.

*The notices marked with an asterisk are either appearing for the first time or have been changed since the preceding issue.

New Apparatus for Franklin, Pa.

A new quadruple combination truck was recently purchased by the Franklin Volunteer Company. It has a closed cab mounted on a Ford 1½-ton chassis. It carries a 500-gallon pump, 150-gallon booster tank, a 35-foot truss ladder overhead, 1,200 feet of 2½-inch hose, and 200 feet of 1½-inch leader line hose on a removable tray. Half the 2½-inch hose is laid for fire-to-hydrant use, and half for hydrant-to-fire use. This, together with a similar unit, is well adapted for small community and rural protection.

A unique night fire alarm system simultaneously contacts the firemen's homes and informs of the location of the fire.



New Quadruple Pumper in Service at Franklin, Pa.

The Round Table

(*Continued from page* 443)

the gauges for any leaks. If tanks are found to be leaking, the company mechanics correct the faults and make the necessary repairs.

One or two tanks have been found to be leaky, and in one case the tank was replaced with a new one. The other tank was repaired.

According to a city ordinance, where parties abandon a gasoline service station, they are required to either remove the underground tanks, or fill them with water and securely cap them.

Edward J. Green, Steubenville, O.: We had a case where a pipe line to a gasoline tank broke and the gasoline found its way into a sewer. For several hundred feet the fumes came up through the manholes and catch basins and entered the houses. It was in the summer and we asked the people to leave their windows open. We opened several fire hydrants and this helped some. When this sewer reached to where side street sewers emptied into it, the fumes were not so bad. The sewer goes into the river a mile away. The fumes were noticed in our stores, but not as much as in some of the homes.

Checking up on the source of the gasoline, we found that one service station reported a loss. They dug down and found the leak and where it had run into the sewer. They lost 875 gallons of gasoline that day.

Two years later another leak was reported and a leak found. A wall was built around the tank and nothing reported since.

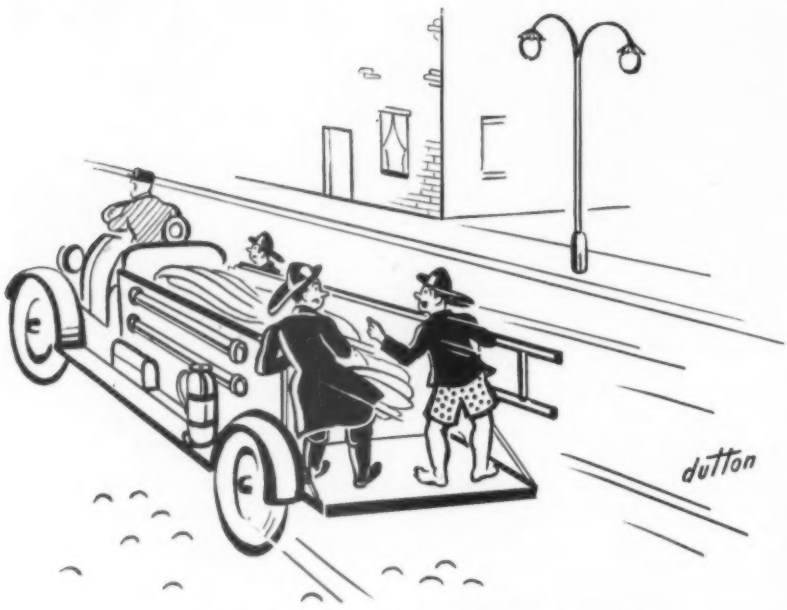
I have heard that in several small villages gasoline tanks have leaked and gasoline found its way into the wells and cisterns.

All tanks in Steubenville are buried 2½ feet underground and a distance away from the property lines. When large tanks of 1,000 to 10,000 gallons are installed, they are buried below the basement floors.

New Station for San Pablo, Cal.

San Pablo dedicated its new $22,000 station on February 12, 1939. One half of this amount was furnished by the WPA, the balance by the taxpayers. M. Mello is the Chief.

FALSE ALARMS



"I can't shake off the feeling that I've forgotten something"

IT WORKED

A fire insurance adjuster had made a trip to a farm to determine the value of property destroyed by a recent fire. After he had made his survey, he went to a telephone to call his office, as he had been instructed.

Country telephone lines are multi-party lines, and when the adjuster picked up the receiver, he heard a woman on the line say:

"I just put on a pan of beans for dinner."

He hung up and waited for the conversation to end.

Three times he lifted the receiver and each time he heard the woman still talking.

In desperation, he picked up the telephone and said:

"Madam, I smell your beans burning."

The plan worked. He made his call.

Radio broadcasting stations are on top of buildings so that it is impossible to throw bricks at the performers.

HOURS BY APPOINTMENT

The entire "A" shift of No. 6 Engine (Baltimore) vouches for this one.

They pulled up to a box at about 6 a.m. and were directed to a nearby house by a negro. They found a long char on the wall, but no sign of fire, and when they questioned the negro, they learned the following.

It seemed that he had discovered the fire around two in the morning, but had not sounded an alarm as he thought the firemen did not come to work until about 6 a.m.

So as soon as 6 o'clock rolled around, he went down the block, and pulled the fire box.

OTIS SMITH.

When you knock at the door and find hubby home, then brother, sell something.

AUTO TRAP

Two hundred motorists with the desire to see a good fire, in fact, any kind of a fire, followed the speeding fire apparatus of Algona, Ia., as the firemen rushed to the county fair grounds.

The police were burning some old tires, and as the fire had gotten out of hand, the firemen were called.

But the motorists were on the fair grounds and could not escape. They all received tickets for following the fire apparatus.

As the rookie said at the examination: "Four out of five have it, but the guy in the room was watching, so no one could use the crib."

THE TRUTH

After the convention, some of the boys and a salesman went for a fishing trip, as it was reported that the fish were biting. But the report must have been highly colored for the boat came back with little to show for the trip.

When asked for details of the trip, the salesman described the fight with a large fish that finally got away. He ended his picturesque narration by saying:

"I tell you that it was that long. I never saw such a fish."

To which the listener replied, "I believe you."

Dimmest lights have the greatest scandle power.

NOT COOPERATIVE

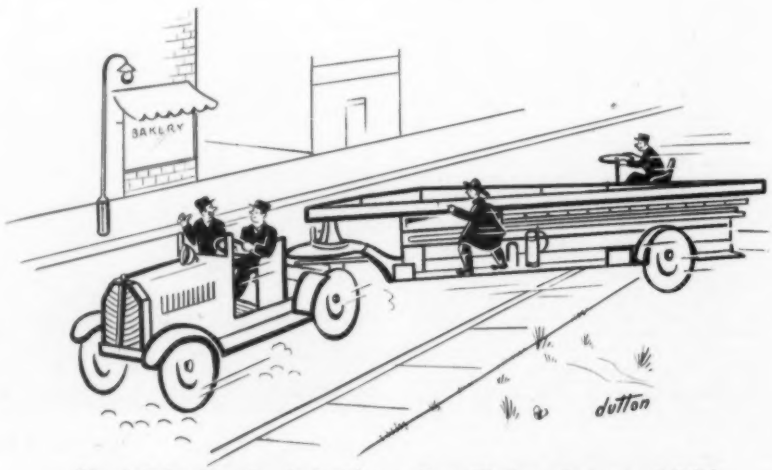
The new addition to the hose company was very much of a ladies' man. He hinted to the one with whom he was friendliest, that there was a new girl to his long list.

"Come on," coaxed the friend, "tell me more about the new girl."

"Why should I?" asked the other.

"Because I'm your buddy."

"No siree," said the other with emphasis. "My girl ain't no buddy's business."



"Joe is going to get us in trouble sometime with those short cuts of his"

CHIEF R. E. MOTTESHEARD
President, and Secy-Treas.
Great Lakes Division
Dearborn, Mich.

CHIEF RAY TILLER
First Vice-President, and Chairman, Exhibit Com.
Waterloo, Iowa

CHIEF W. H. PALMER
Second Vice-President
Charlotte, N. C.

JAY W. STEVENS
Executive Secretary
San Francisco, Cal.

CHIEF JAMES T. O'DONNELL
Director
Honorary Chief of Salvage Corps
St. Louis, Mo.

CHIEF C. J. BRENNAN
Convention Host and Ex-Pres.
San Francisco, Cal.

CHIEF D. B. TIERNEY
Director, and Past President
Arlington, Mass.

EX-CHIEF J. J. MULCAHEY
Recording Secretary-Treasurer
Yonkers, N. Y.

CHIEF P. STEINKELLNER
Director
Milwaukee, Wis.

CHIEF JOHN W. O'HEARN
Director, and Secy.-Treas.
New England Division
Watertown, Mass.

CHIEF ROSS B. DAVIS
Director, and President
Eastern Division
Philadelphia, Pa.

CHIEF FRANK H. BENNETT
Director, and President
Southeastern Division
Durham, N. C.

OFFICERS, INTERNATIONAL ASSOCIATION OF FIRE CHIEFS

CHIEF W. S. KNIGHT
Director
Salt Lake City, Utah

CHIEF S. E. HANSEN
Director, and President
Southwestern Division
Dallas, Texas

CHIEF J. J. McELLIGOTT
Chairman, Membership and Convention Attendance Com.
New York, N. Y.

CHIEF RALPH J. SCOTT
Chairman, Educational Com.
Los Angeles, Cal.

DEP. CHIEF J. J. T. WALDRON
First Vice-President
Eastern Division
New York, N. Y.

EX-CHIEF R. L. SMITH
Ex-President, and Treasurer
Eastern Division
Pittsburgh, Pa.

CHIEF C. E. CLARK
Secretary
Eastern Division
Wayne, Pa.

CHIEF ED. P. WELCH
President
Great Lakes Division
Columbus, Ohio

CHIEF SOL WILLIS,
President
Missouri Valley Division
Sidney, Nebr.

CHIEF S. J. POPE
President
New England Division
Boston, Mass.

CHIEF THOS. H. COTTER
First Vice-President
New England Division
Providence, R. I.

CHIEF IRBY M. KLINCK
First Vice-President
Southeastern Division
Memphis, Tenn.

OFFICERS, COMMITTEEMEN AND OFFICERS OF DIVISIONAL ASSOCIATIONS, I. A. F. C.

CHIEF W. W. STEPHEN
Secretary-Treasurer
Southeastern Division
Monsanto Chemical Co.
Anniston, Ala.

CHIEF G. F. WILLIAMS
First Vice-President
Southwestern Division
College Station, Texas

CHIEF J. RAY PENCE
Secretary-Treasurer
Southwestern Division
Stillwater, Okla.

CHIEF W. R. WILLIAMS
President
Pacific Coast Division
Fresno, Cal.

CHIEF A. J. BAKER
First Vice-President
Pacific Coast Division
Lewistown, Mont.

CHIEF ED. STEINHAUER
Treasurer
Pacific Coast Division
Redding, Cal.

EX-CHIEF JOHN J. TOWEY
Ex-President
Newark, N. J.

CHIEF R. A. BOGAN
Ex-President
Baton Rouge, La.

CHIEF D. W. BROSNAN
Ex-President
Albany, Ga.

CHIEF J. N. SULLIVAN
Ex-President
Utica, N. Y.

CHIEF JOHN M. EVANS
Ex-President
New Orleans, La.

CHIEF SELDEN R. ALLEN
Ex-President
Brookline, Mass.

OFFICERS OF DIVISIONAL ASSOCIATIONS AND EX-PRESIDENTS, I. A. F. C.

J. H. RINGERS
Sales Manager
Fabric Fire Hose Co.

W. T. COLE
President
Fabric Fire Hose Co.

W. A. OLEN
Pres. & Gen. Mgr.
Four Wheel Drive Auto Co.

R. H. SCHMIDT
Gen. Sales Mgr.
Four Wheel Drive Auto Co.

HUBERT WALKER
Mgr. Motor Fire Apparatus Sales Engineering Dept.
American-La France-Foamite Corp.

E. E. O'NEILL
Exec. Vice-Pres.
American-La France-Foamite Corp.

C. F. SMITH
Vice-President
American-La France-Foamite Corp.

W. J. CHILDS
President
American-La France-Foamite Corp.

J. O. BINFORD
Gen. Sales Mgr.
American-La France-Foamite Corp.

J. T. RYAN
Pres. & Gen. Mgr.
Mine Safety Appliances Co.

J. B. DAVIES
Mgr. Industrial Dept.
Mine Safety Appliances Co.

GEO. L. SETH
Asst. Mgr. Ind. Dept.
Mine Safety Appliances Co.

NELSON THOMPSON
Sales Manager
Homelite Corp.

D. S. KELLAM
Kellam Mfg. Co.

GEORGE J. KUSS
President
Woodhouse Mfg. Co., Inc.

EDWARD CAIRNS
President
Cairns & Brother

WILLIAM SCHLEINITZ
President
Dayton Fire Equipment Co.

FIRE EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

J. H. GREEN
Gen. Mgr.
Eureka Fire Hose Div.
U. S. Rubber Co.

W. W. SCOTT
Sales Mgr. Signal Div.
Federal Electric Co.

S. H. CARBIS
President
Aluminum Ladder Co.

T. M. BURTON
Secretary
D. B. Smith & Co.

CHARLES H. FOX
Chairman of the Board
Ahrens-Fox Fire Engine Co.

HAROLD LeBLOND
President
Ahrens-Fox Fire Engine Co.

JOHN P. AHRENS
Vice-President
Ahrens-Fox Fire Engine Co.

C. E. MEEK
N. Y. Dist. Mgr.
Ahrens-Fox Fire Engine Co.

R. C. ANDERSON
Vice-President
Buckeye Iron & Brass Works

PETER PIRSCH
President
Peter Pirsch & Sons Co.

W. R. PIRSCH
Vice-President
Peter Pirsch & Sons Co.

B. D. BARTON
American-Marsh Pumps, Inc.

ARTHUR MYERS
Director of Sales
Atlas Fire Equipment Co.

J. L. HARRIS
President
Harris Bros. Mfg. Co.

W. G. LONEY
Mgr., Fire Hose Dept.
Hewitt Rubber Corp.

FRED A. WATEROUS
Sales Manager
Waterous Co.

FIRE EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

C. K. BALL
Sales Mgr. Fire Engine Div.
Mack Manufacturing Corp.

CHAS. H. STEPHENS
President
Buffalo Fire Appliance Corp.

H. P. SCHULTZ
Sales Manager
Republic Rubber Co.

LESTER STEVENSON
Sales Manager
[illegible]

L. E. LOWRY
Sales Promotion Mgr.
The Gamewell Co.

V. C. STANLEY
Pres. & Gen. Mgr.
The Gamewell Co.

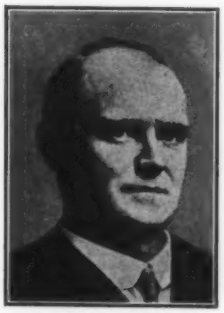
E. J. McCARTHY
Gen. Sales Mgr.
The Gamewell Co.

FRANK C. STOVER
Chicago Dist. Mgr.
The Gamewell Co.

WM. J. CARROLL
President
Rockwood Sprinkler Co. Div.
The Gamewell Co.

R. A. CORNWALL
Kerotest Mfg. Co.

JOHN B. HAWLEY, JR.
Pres. & Gen. Mgr.
Northern Pump Co.



ALBERT E. HANSEN
President
Elkhart Brass Mfg. Co.

A. F. TOWNSEND
General Manager
Manhattan Rubber Mfg. Div.
Raybestos-Manhattan, Inc.

LESTER W. YOUNG
Sales Manager
Cayuga Mfg. Corp.

WILLIAM MOELLER
Superior Fire Equipment Co.

G. E. BRADBROOK
Vice-President
C. G. Braxmar Company

JOHN O. VEIT
Secretary
C. G. Braxmar Company

FIRE EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

Manufacturers' Announcements

Safety Ladder Anchors

McDaniel & Richeson, 3716 Sixth Ave., Ft. Worth, Texas, have recently developed safety anchors for fire ladders. The device consists of airplane cable (or wire rope) fastened securely to a steel hook. The cable passes through a guide at the top of the device and then through a hole in the housing. From here it passes around a ratchet, or drum, upon

Close-Up of Anchor Equipment

which there are teeth or catches. The cable is so wound that when tension is put on the hook, the catches will not allow cable to extend out further, but will automatically take up the slack in the cable and keep tension on the point of the hook at all times.

The dogs can be disengaged by lifting up with a small pin through the dog. To set the dogs back in operation, the pin is merely turned with the finger to such a position as to drop down into a vertical slot, and a small spring will push the dog down to where the end of the dog will ride on the teeth of ratchet or drum.

Power to wind the cable back on the drum is transmitted to the drum by a coil spring, such as used in a graphophone.

In operation, the ladder is set at a desirable location. The first man up the ladder removes the steel hook from the carrying position on the beam of the ladder and passes hook between rungs of ladder. Hook is attached to some firm object. The pins in the dogs are then turned to point where the dogs drop in and catch. After the dogs have caught, the cable is pulled in gently to make sure each catch is in an operative position.

The device prevents ladders from falling, through keeping them firmly in

Ladder in Position with Hooks Attached to Window Sill

position. Two of the units are used in each ladder.

Illustrations herewith show the device, and the methods of operation.

A New Fire Department Stretcher

The Dunn Folding Stretcher, manufactured by H. E. Williams, 145 Seymour St., Syracuse, N. Y. has just been placed on the market. It is an all metal stretcher, built of aluminum alloy, and is furnished with leather or heavy fabric straps, as preferred.

The stretcher is twenty inches wide and six inches thick when folded, and three inches high when in use. The stretcher is readily folded for carrying, and its weight complete is but twenty pounds.

Patients can be strapped securely to the stretcher and the stretcher carried in any position without the patient shifting in position. The stretcher is particularly useful in handling accidents involving broken backs, or other fractures, where movement of the patient might result in serious complications.

The stretcher was invented by fire department members.

Portable Fire Pumps

The Southworth Machine Co. of Portland, Maine, is manufacturing a portable power pump for forestry work, for the protection of isolated communities, farms, summer camps, institutions, and for regular fire companies to broaden their scope in rural districts.

The pumper is designed to take water from any available source, whether from suction or from a hydrant. Two men can carry the unit to the nearest water, which may be a well, brook, river, pond, tank, or low pressure hydrant.

Sufficient water under pressure can be supplied by the pumper to give two fire streams through 1½-inch hose or a single stream through a line of 1,000 feet or more of hose with a small tip. The unit discharges 125 gallons per minute, under pressure.

Cable Fault Locator

Catalogue E-53-441(1) on the new Type U Test Set has been issued by the Leeds & Northrup Company, 4907 Stenton Avenue, Philadelphia, Pa., to describe a device for detecting line and cable faults. This six-page illustrated publication shows the new design and explains the principles of operation. This catalogue is a supplement to the fifty-two-page Note Book E-53-441 published last year.

Improvements in Atlas Net

The Atlas Fire Equipment Company, Inc., of New York, N. Y., recently announced two improvements in its life nets.

The new "1940 Model Atlas" is equipped with these improvements which

Upper: Atlas Dual Type Shock Absorbers

Lower: Atlas Moulded Rubber Hand-Grip
These grips revolve when impact takes place, eliminating friction burns and bruises. They provide a safe, firm grip for the men holding the net.

are: newly designed dual type shock absorbers and moulded rubber hand grips. These sealed, metal encased shock absorbers, which are dustproof and thoroughly lubricated, transmit the force of impact with greater synchronizing equality throughout the net.

Moisture Indicator

Circulars have been issued by the Colloid Equipment Company, Inc., 50 Church Street, New York, N. Y., to describe their new Moisture Dectors, recently placed on the market. Tests for moisture can be made instantly and accurately by a battery operated unit.

Artificial Respiration Trainer

The Mine Safety Appliances Company, Braddock, Thomas, and Meade Streets, Pittsburgh, Pa., announces a new Artificial Respiration Trainer for teaching the technique of manual resuscitation.

The instrument indicates graphically on a chart the actual performance of the operator, the pressure applied at each stroke, the volume of air expelled, the

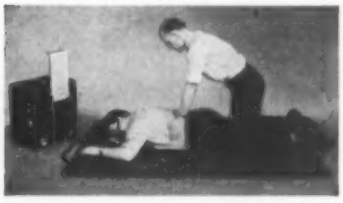
CLASSIFIED ADVERTISING

Bids Wanted, For Sale and Help Wanted $5 per inch. Position Wanted, $2.50 per inch.

Wanted to Buy

Small used fire truck with pumper and other miscellaneous equipment. V. Carl Tragesser, Pres., North Sewickley Twp. Vol. F.D.—3601—5th Ave., Beaver Falls, Pa.

timing and rhythm. This instrument may also be used as a check for men already trained.



Demonstrating the Use of the Set

Automatic Relief and Hose Valves

The Ross Valve Manufacturing Company, Inc., Troy, N. Y., has issued a new bulletin, No. 39, "Fire Department Specialties," describing the various types of Ross Automatic Fire Engine Relief Valves, and Hose Valves. Regardless of variation in pressure of the source of supply, these valves are claimed to maintain the desired pressure at the hose nozzle.

Love Succeeds Schellin

John C. Schellin, for many years General Manager of the Akron Brass Company, manufacturers of fire department specialties, recently withdrew from that company to devote his entire time to other interests. He has been succeeded by J. M. Love who has been with the company for some time.

J. M. Love

John C. Schellin

Mr. Schillin is still Secretary of the company and is on the Board of Directors, although he will not be active in the management of the company.

Mr. Love has been with the company four years and has served as Assistant Secretary and Treasurer, Secretary, and Factory Manager during that time. Before that, he had been in the brass business in Indiana for seven years, although in a different line.

J. A. Crane Dead

J. A. Crane, Branch Manager of the Minneapolis, Minn., office of the Eureka Fire Hose Division of United States Rubber Company, died on Friday, August 18, 1939 at the age of fifty. Mr. Crane, who entered the employ of the Eureka Company in 1915 is survived by a son, Irving Crane of Chicago.

Robert G. Browning was appointed Branch Manager to fill the vacancy caused by Mr. Crane's death.

J. A. Crane

Robert G. Browning

July, 1939, Losses $22,468,304

Fire losses in the United States for July, 1939, were estimated to be $22,468,304, according to figures issued by the National Board of Fire Underwriters. This estimate is based on notices received by member companies with an allowance for unreported and uninsured losses. July losses show an increase of 9.9 per cent over July, 1938, but it is 7.1 per cent lower than June, 1939. The aggregate loss for the past seven months is approximately nine per cent higher than during the corresponding period of 1938.

Chief Kingsley Dead

Chief E. I. Kingsley of the Aberdeen Fire Department, Aberdeen, S. D., died in the hospital following an operation, after twenty-nine years as Chief. He was eighty-two years old, and spent sixty-seven of them fighting fires.

He joined the department at the age of twelve, as a torch boy. Nine years later, in 1878, he became Assistant Engineer. After becoming the District Chief in 1896, he resigned, but was soon recalled to serve as Chief. He remained in that capacity until his death.

A part of the resolution passed by the department stated:

"While we mention the name of our beloved brother, Chief Edward Ira Kingsley, may our sympathies be broadened because of the interest he manifested in our welfare. He dedicated his life to fire service. He was possessed of the higher and nobler attributes of man's nature. The record of Chief Kingsley stands out preeminently as having the many splendid qualities so necessary in life. We are confident that he was imbued with them all, and had proved himself worthy by those who valued bravery and loyalty."

He was a member of the National Fire Chiefs Association and the Veteran Fire Fighters of Minneapolis.

Chief Kingsley is survived by his widow.

Quincy, Mass., Retains Fireman Operators

The City Council, Quincy, Mass., has placed the Fire and Signal Departments under Chief Sands rather than under the control of Alarm Superintendent Smith. Previously the Civil Service required that only civilian operators be employed, but due to the change, fireman operators are retained, thus saving the city $14,000 a year.

Ex-Chief Page Dead

Harry B. Page, former Chief of the East Haven Fire Department, died suddenly at Ludlow, Vt. at the age of sixty-nine. He had served as Chief for thirty-two years before he resigned in 1936.

He is survived by his widow, three sisters, and two brothers.

New Officers Elected at Mt. Vernon, Ill.

Fred Handerline, Chief at Carlisle, Illinois, was elected President of the Inter-city Fire Service, at Mount Vernon, Ill., following the resignation of Chief Albert Herring as president.

Other officers elected were: O. C. Foreeman, Flora, Secretary; and Ernest Glenn, Rosiclaire, Treasurer. Chief Herring was elected Chairman of the Executive Board, and Director of Outside Fire Alarms.

Appropriation Stops Layoff

Fire protection is more than a service, but must be sold as one would a commodity. Chief A. W. Olsen of Omaha, Neb., realized that when he succeeded in preventing a four-months layoff of twenty-three firemen because of dwindling funds.

He pointed out to directors of the Metropolitan Utilities District that in many instances the rescue squad of the fire department had responded to gas cases, and that more than half of the rescue squad calls were for gas cases.

The board not only appropriated $12,000 to prevent the forced vacations that seemed necessary, but it also approved the purchase of a resuscitator for the use of the rescue squad. Members of the board pointed out that it would be cheaper to make the donation than to provide its own gas inhalator rescue service.

WHERE TO BUY

A HANDY LIST OF REPUTABLE MANUFACTURERS

FOR EASY REFERENCE WHEN YOU'RE IN THE MARKET FOR NEW FIRE EQUIPMENT

(Page number following each name refers to advertisement in this issue)

ALARM SYSTEMS
American District Telegraph Co. (*p. 390*)
Federal Electric Co. (*p. 398*)
Gamewell Co. (*pp. 382-383*)
Graybar Electric Co. (*p. 433*)
Sealand Corp. (*p. 445*)
Sterling Siren Fire Alarm Co., Inc. (*p. 441*)

BADGES
C. G. Braxmar Co., Inc. (*p. 457*)
Johnson-National Insignia Co. (*p. 458*)
Wentworth-Forman Co., Inc. (*p. 458*)
Worstal Badge Works (*p. 462*)

BOOTS, RUBBER
Eureka Fire Hose Division (*Back Cover*)
M. L. Snyder & Son (*p. 458*)
Midwestern Mfg. Co. (*p. 453*)

BUNKER SUITS
Cairns & Brother (*p. 465*)
Dayton Fire Equipment Co. (*p. 446*)
Globe Mfg. Co. (*p. 449*)
Janesville Apparel Co. (*p. 461*)
M. L. Snyder & Son (*p. 458*)
Midwestern Mfg. Co. (*p. 453*)

BRAKES, AIR, FIRE APPARATUS
Bendix-Westinghouse Automotive Air Brake Co. (*p. 453*)

CAPS, UNIFORM
Cairns & Brothers (*p. 465*)
M. L. Snyder & Son (*p. 458*)
Wentworth-Forman Co., Inc. (*p. 458*)

COATS, RUBBER
Cairns & Brother (*p. 465*)
Dayton Fire Equipment Co. (*p. 446*)
Eureka Fire Hose Division (*Back Cover*)
Globe Mfg. Co. (*p. 449*)
Midwestern Mfg. Co. (*p. 453*)
M. L. Snyder & Son (*p. 458*)

CUTTERS, BAR, CABLE and CHAIN
H. K. Porter, Inc. (*p. 461*)

CUTTING and WELDING EQUIPMENT
Kerotest Mfg. Co. (*p. 391*)

DOOR OPENERS, FIRE STATION
Akron Brass Mfg. Co., Inc. (*p. 434*)
J. M. Loeffler (*p. 462*)
Overhead Door Corp. (*p. 442*)

EXTINGUISHERS
Ahrens-Fox Fire Engine Co. (*pp. 388-389*)
American-La France-Foamite Corp. (*pp. 384-385*)
Buffalo Fire Appliance Corp. (*pp. 426-427*)
Elkhart Brass Mfg. Co. (*p. 429*)
Harris Brothers Mfg. Co. (*p. 458*)
National Foam System, Inc. (*p. 446*)
D. B. Smith & Co. (*p. 375*)
M. L. Snyder & Son (*p. 458*)

FIRE DEPARTMENT SUPPLIES, MISC.
Akron Brass Mfg. Co., Inc. (*p. 434*)
American-La France-Foamite Corp. (*pp. 384-385*)
Bi-Lateral Fire Hose Co. (*p. 434*)
Buffalo Fire Appliance Corp. (*pp. 426-427*)
Capital Fire Equipment Co. (*p. 461*)
Cayasler Mfg. Co. (*p. 462*)
Dayton Fire Equipment Co. (*p. 446*)
Elkhart Brass Mfg. Co. (*p. 429*)
Eureka Fire Hose Division (*Back Cover*)
Excelsior Brass Mfg. Co. (*p. 446*)
Globe Mfg. Co. (*p. 449*)
Harris Brothers Mfg. Co. (*p. 458*)
Hewitt Rubber Corp. (*p. 465*)
Peter Pirsch & Sons Co. (*pp. 380-381*)
Seagrave Corp. (*pp. 392-393*)
Wentworth-Forman Co., Inc. (*p. 458*)

FIRST AID EQUIPMENT
Akron Brass Mfg. Co., Inc. (*p. 434*)
E & J Mfg. Co. (*p. 453*)
Harris Brothers Mfg. Co. (*p. 458*)
Mine Safety Appliances Co. (*p. 437*)

FLASHLIGHTS and SEARCHLIGHTS, HAND
Cairns & Brother (*p. 465*)
Carpenter Mfg. Co. (*p. 462*)
H. O. R. Co., Inc. (*p. 438*)
Kerotest Mfg. Co. (*p. 391*)
Koehler Mfg. Co. (*p. 465*)
Mine Safety Appliances Co. (*p. 437*)

FLOODLIGHTING EQUIPMENT
American-La France-Foamite Corp. (*pp. 384-385*)
Carpenter Mfg. Co. (*p. 462*)
Graybar Electric Co. (*p. 433*)
Homelite Corp. (*p. 394*)
Kato Engineering Co. (*p. 458*)
Mine Safety Appliances Co. (*p. 437*)
U. S. Motors Corp. (*p. 441*)

FOAM GENERATORS
American-La France-Foamite Corp. (*pp. 384-385*)
National Foam System, Inc. (*p. 446*)
M. L. Snyder & Son (*p. 458*)

GAS MASKS and RESPIRATORS
American-La France-Foamite Corp. (*pp. 384-385*)
H. S. Cover (*p. 465*)
Mine Safety Appliances Co. (*p. 437*)

GOGGLES
Cairns & Brother (*p. 465*)
H. S. Cover (*p. 465*)
Mine Safety Appliances Co. (*p. 437*)

HELMETS
Cairns & Brother (*p. 465*)
Mine Safety Appliances Co. (*p. 437*)

HOSE
American-La France-Foamite Corp. (*pp. 384-385*)
Bi-Lateral Fire Hose Co. (*p. 434*)
Cayasler Mfg. Co. (*p. 462*)
Eureka Fire Hose Division (*Back Cover*)
Fabric Fire Hose Co. (*Inside Front Cover*)
Goodyear Tire & Rubber Co. (*p. 386*)
Hewitt Rubber Corp. (*p. 465*)
Manhattan Rubber Mfg. Division (*p. 395*)
Republic Rubber Division (*p. 430*)
M. L. Snyder & Son (*p. 458*)

HOSE BRIDGES
Hale Fire Pump Co. (*p. 457*)
Taylor Mfg. Co. (*p. 462*)

HOSE CARTS, REELS, RACKS
Akron Brass Mfg. Co., Inc. (*p. 434*)
Capital Fire Equipment Co. (*p. 461*)
Elkhart Brass Mfg. Co. (*p. 429*)
Fabric Fire Hose Co. (*Inside Front Cover*)
Harris Bros. Mfg. Co. (*p. 458*)
J. M. Loeffler (*p. 462*)
Peter Pirsch & Sons Co. (*pp. 380-381*)
Sealand Corp. (*p. 445*)
M. L. Snyder & Son (*p. 458*)

HOSE CLAMPS
Kellam Mfg. Co. (*p. 438*)

HOSE COUPLINGS, ADAPTERS, WRENCHES
Ahrens-Fox Fire Engine Co. (*pp. 388-389*)
Akron Brass Mfg. Co., Inc. (*p. 434*)
Bi-Lateral Fire Hose Co. (*p. 434*)
Buckeye Iron & Brass Works (*p. 430*)
Elkhart Brass Mfg. Co. (*p. 429*)
Eureka Fire Hose Division (*Back Cover*)
Excelsior Brass Mfg. Co. (*p. 446*)
Harris Brothers Mfg. Co. (*p. 458*)
J. M. Loeffler (*p. 462*)
Manhattan Rubber Mfg. Division (*p. 395*)
Republic Rubber Mfg. Co. (*p. 430*)

HOSE EXPANDERS
Akron Brass Mfg. Co., Inc. (*p. 434*)
Buckeye Iron & Brass Works (*p. 430*)
Dayton Fire Equipment (*p. 446*)

HOSE JACKETS
Akron Brass Mfg. Co. (*p. 434*)
Cooper Hose Jacket Co. (*p. 462*)

HYDRANTS, FIRE
Eddy Valve Co. (*p. 465*)
Mueller Co. (*p. 454*)
Ross Valve Mfg. Co. (*p. 457*)
Waterous Co. (*p. 465*)

LADDERS
Aluminum Ladder Co. (*p. 387*)
American-La France-Foamite Corp. (*pp. 384-385*)
Buffalo Fire Appliance Corp. (*pp. 426-427*)
Duo-Safety Ladder Corp. (*p. 397*)
Mack Mfg. Corp. (*pp. 376-377*)
Peter Pirsch & Sons Co. (*pp. 380-381*)
Seagrave Corp. (*pp. 392-393*)

LIFE BELTS
American-La France-Foamite Corp. (*pp. 384-385*)
Atlas Fire Equipment Co., Inc. (*pp. 378-379*)
Buckeye Iron & Brass Works (*p. 430*)
Cairns & Brother (*p. 465*)
Dayton Fire Equipment Co. (*p. 446*)
Mine Safety Appliances Co. (*p. 437*)
Morrissey Mfg. Co. (*p. 442*)
Superior Fire Equipment Co. (*p. 454*)

LIGHTS, TRAFFIC WARNING
Akron Brass Mfg. Co., Inc. (*p. 434*)
Buckeye Iron & Brass Works (*p. 430*)
Carpenter Mfg. Co. (*p. 462*)
Federal Electric Co. (*p. 398*)
H. O. R. Co., Inc. (*p. 438*)
Sterling Siren Fire Alarm Co., Inc. (*p. 441*)

MOTOR FIRE APPARATUS
American Marsh Pumps, Inc. (*p. 445*)
Ahrens-Fox Fire Engine Co. (*pp. 388-389*)
American-La France-Foamite Corp. (*pp. 384-385*)
Buffalo Fire Appliance Corp. (*pp. 426-427*)
Cayasler Mfg. Co. (*p. 462*)
Four Wheel Drive Auto Co. (*Inside Back Cover*)
Hale Fire Pump Co. (*p. 457*)
Mack Mfg. Corp. (*pp. 376-377*)
National Fire Apparatus Co. (*p. 450*)
Peter Pirsch & Sons Co. (*pp. 380-381*)
Seagrave Corp. (*pp. 392-393*)
Sealand Corp. (*p. 445*)

NETS, LIFE and DRILL TOWER
Atlas Fire Equipment Co., Inc. (*p. 378-379*)
Superior Fire Equipment Co. (*p. 454*)

NOZZLES
Akron Brass Mfg. Co., Inc. (*p. 434*)
American-La France-Foamite Corp. (*pp. 384-385*)
Bi-Lateral Fire Hose Co. (*p. 434*)
Buckeye Iron & Brass Works (*p. 430*)
Joseph L. Day (*p. 450*)
Elkhart Brass Mfg. Co. (*p. 429*)
Eureka Fire Hose Division (*Back Cover*)
Excelsior Brass Mfg. Co. (*p. 446*)
Fabric Fire Hose Co. (*Inside Front Cover*)
Fog Nozzle Co. (*p. 458*)
Hale Fire Pump Co. (*p. 457*)

OXYGEN REVIVING APPARATUS
Bishinger-Koehler Mfg. Co. (*p. 449*)
E. & J. Mfg. Co. (*p. 453*)
Mine Safety Appliances Co. (*p. 437*)

PUMPS, FIRE APPARATUS
Ahrens-Fox Fire Engine Co. (*pp. 388-389*)
American-La France-Foamite Corp. (*pp. 384-385*)
American-Marsh Pumps, Inc. (*p. 445*)
Hale Fire Pump Co. (*p. 457*)
La Bour Co. (*p. 478*)
Northern Pump Co. (*p. 462*)
Peter Pirsch & Sons Co. (*pp. 380-381*)
Sealand Corp. (*p. 445*)
Waterous Co. (*p. 465*)

PUMPS, HAND FIRE
D. B. Smith & Co. (*p. 375*)

PUMPS, PORTABLE
American-Marsh Pumps, Inc. (*p. 445*)
Hale Fire Pump Co. (*p. 457*)
Homelite Corp. (*p. 394*)
La Bour Co. (*p. 478*)
Northern Pump Co. (*p. 462*)
Peter Pirsch & Sons Co. (*pp. 380-381*)
Sealand Corp. (*p. 445*)
Southworth Machine Co. (*p. 458*)

SALVAGE COVERS
Diamond Brand Canvas Products Co. (*p. 465*)
Elkhart Brass Mfg. Co. (*p. 429*)
Fulton Bag & Cotton Mills (*p. 446*)
Mine Safety Appliances Co. (*p. 437*)
M. L. Snyder & Son (*p. 458*)

SIRENS
Federal Electric Co. (*p. 398*)
H. O. R. Co., Inc. (*p. 438*)
Seagrave Corp. (*pp. 392-393*)
Sterling Siren Fire Alarm Co., Inc. (*p. 441*)

SMOKE EJECTORS
Homelite Corp. (*p. 394*)

STRETCHERS
Mine Safety Appliances Co. (*p. 437*)

TIRES
Goodyear Tire & Rubber Co. (*p. 386*)

TRAFFIC WARNING SIGNALS (See Sirens; Lights; Whistles)

WEARING APPAREL, FIREMEN'S (See Boots, Bunker Suits, Caps, Coats)
Cairns & Brother (*p. 465*)
Eureka Fire Hose Division (*Back Cover*)
Globe Mfg. Co. (*p. 449*)
Janesville Apparel Co. (*p. 461*)
John Rissman & Son (*p. 457*)
Midwestern Mfg. Co. (*p. 453*)
Mine Safety Appliances Co. (*p. 437*)
Worstal Badge Works (*p. 462*)

WHISTLES, FIRE APPARATUS
Buckeye Iron & Brass Works (*p. 430*)

For information about products of any manufacturer not listed above, write to Readers' Service Dept., FIRE ENGINEERING, 24 West 40th St., New York, N. Y.

Large or small—city or rural—your fire department needs the LaBour Fire Trailer. Large departments can use it differently than do small ones; in cities it's valuable for basement dewatering as well as for an extra booster in fighting fires where long runs of hose are necessary. Small towns can use it for rural fires, and also keep it to help or substitute for their regular pumping equipment in emergencies.

150 G.P.M. at 100 LBS. PRESSURE

The pump, driven by its own engine, delivers 150 gallons per minute against 100 lbs. pressure. It will draw from ponds or streams, and dirty water cannot harm the pump. Priming is quick and completely automatic; once the engine is started, the pump requires no further attention.

Any passenger car can pull this unit to the fire. Quick acting universal safety clamp attaches to bumper.

Full details are contained in Bulletin 47. Ask for your copy today.

THE LABOUR COMPANY, Inc.
1544 Sterling Ave.
Elkhart, Indiana, U. S. A.

LABOUR FIRE TRAILER TRADE MARK

ADVERTISING INDEX

SEPTEMBER, 1939

	Page
Ahrens-Fox Fire Engine Co.	388-389
Akron Brass Mfg. Co., Inc.	434
Aluminum Ladder Co.	387
American District Telegraph Co.	390
American-La France-Foamite Corp.	384-385
American Marsh Pumps, Inc.	445
Atlas Fire Equipment Co.	378-379
Bendix-Westinghouse Automotive Air Brake Co.	453
Bi-Lateral Fire Hose Co.	434
Bishinger-Koehler Mfg. Co.	449
Braxmar Co., Inc., C. G.	457
Buckeye Iron & Brass Works	430
Buffalo Fire Appliance Corp.	426-427
Cairns & Brother	465
Capital Fire Equipment Co.	461
Carpenter Mfg. Co.	462
Cayasler Mfg. Co.	462
Cooper Hose Jacket Co.	462
Cover, H. S.	465
Day, Joseph L.	450
Dayton Fire Equipment Co.	446
Diamond Brand Canvas Products Co.	465
Duo Safety Ladder Corp.	397
E. & J. Mfg. Co.	453
Eddy Valve Co.	465
Elkhart Brass Mfg. Co.	429
Eureka Fire Hose Division of United States Rubber Co.	Back Cover
Excelsior Brass Mfg. Co.	446
Fabric Fire Hose Co.	Inside Front Cover
Federal Electric Co.	398
Fog Nozzle Co.	458
Four Wheel Drive Auto Co.	Inside Back Cover
Fulton Bag & Cotton Mills	446
Gamewell Company	382-383
Globe Mfg. Co.	449
Goodyear Tire & Rubber Co.	386
Graybar Electric Co.	433
H.O.R. Co., Inc.	438
Hale Fire Pump Co.	457
Harris Bros. Mfg. Co.	458
Hewitt Rubber Corp.	465
Homelite Corp.	394
INFORMATON FOR BUYERS	477
Janesville Apparel Co.	461
Johnson-National Insignia Co.	458
Kato Engineering Co.	458
Kellam Mfg. Co.	438
Kerotest Mfg. Co.	391
Koehler Mfg. Co.	465
La Bour The, Company	478
Loeffler, Joseph M.	462
Mack Mfg. Corp.	376-377
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.	395
Midwestern Mfg. Co.	453
Mine Safety Appliances Co.	437
Morrissey Mfg. Co.	442
Mueller Co.	454
National Fire Apparatus Co.	450
National Foam System, Inc.	446
Northern Pump Co.	462
Overhead Door Corp.	442
Pirsch & Sons Co., Peter	380-381
Porter, Inc., H. K.	461
Republic Rubber Div. (Lee Rubber & Tire Corp.)	430
Rissman & Son, John	457
Ross Valve Mfg. Co.	457
Seagrave Corp.	392-393
Sealand Corp.	445
Smith & Co., D. B.	375
Snyder & Son, M. L.	458
Southworth Machine Co.	458
Sterling Siren Fire Alarm Co., Inc.	441
Superior Fire Equipment Co.	454
Taylor Mfg. Co.	462
U. S. Motors Corp.	441
Waterous Co.	465
Wentworth-Forman Co., Inc.	458
Worstal Badge Works	462

See "Where To Buy" Section on page 477

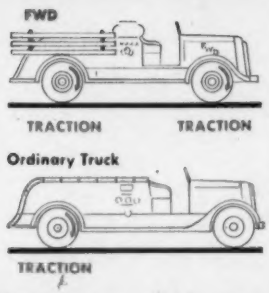
"Doubly Sure" TO GET TO FIRES WHEN FOUR-WHEELS-DRIVE

Just as surely as you get more than twice the water through a 4 inch hose as is possible through a 2 inch hose—so do you double your certainty of getting to the fire quicker and safer with four-wheel-drive apparatus — for with the FWD — all four wheels are alive with power and grip the road for the run — and slippery roads and bad grades, impassable to ordinary vehicles — are safely negotiated with FWD's . . . The two driving axles of the FWD, delivering powered traction to front as well as rear wheels, give you double protection in safety and dependability — protect the lives of firemen and users of the street—FWD is doubly sure of getting to the fire. Its increased traction and positive control save minutes that count. Cities from coast-to-coast look to FWD apparatus for this extra safety and performance. Available in a complete line of fire trucks with rotary or centrifugal pumpers in triple or quadruple combination, aerials, etc. Write for literature.

FWD Model KSU
1000 gallon triple combination centrifugal Pumper
in service with the City of Duluth, Minnesota.

Goes Where Other Vehicles Fail

Snow or mud blocked streets -- or streets torn up for construction, steep grades and locations ordinarily inaccessible, present no fire hazard with four-wheel-drive.



Faster Get-Away

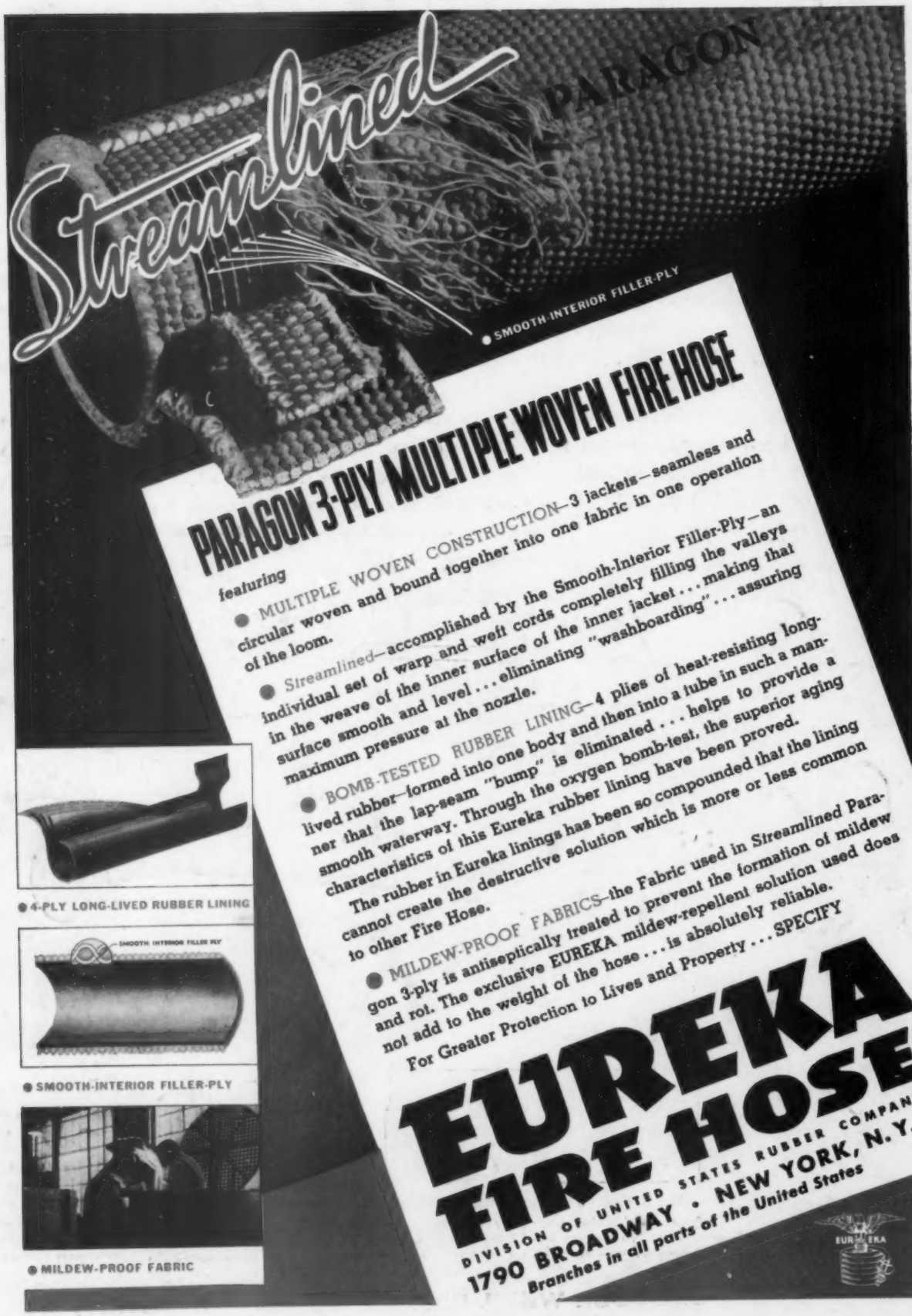
Power on all four wheels makes full use of all the engine power for acceleration—slippery streets that ordinarily would cause wheel spin and delay do not present hazards. All the weight of the truck and its load are converted into powered traction for maximum performance.

FWD

THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wisconsin

Canadian Factory: **KITCHENER, ONTARIO**

GETS TO THE FIRE QUICKER AND SAFER



PARAGON 3-PLY MULTIPLE WOVEN FIRE HOSE

featuring

● MULTIPLE WOVEN CONSTRUCTION—3 jackets—seamless and circular woven and bound together into one fabric in one operation of the loom.

● Streamlined—accomplished by the Smooth-Interior Filler-Ply—an individual set of warp and weft cords completely filling the valleys in the weave of the inner surface of the inner jacket . . . making that surface smooth and level . . . eliminating "washboarding" . . . assuring maximum pressure at the nozzle.

● BOMB-TESTED RUBBER LINING—4 plies of heat-resisting long-lived rubber—formed into one body and then into a tube in such a manner that the lap-seam "bump" is eliminated . . . helps to provide a smooth waterway. Through the oxygen bomb-test, the superior aging characteristics of this Eureka rubber lining have been proved. The rubber in Eureka linings has been so compounded that the lining cannot create the destructive solution which is more or less common to other Fire Hose.

● MILDEW-PROOF FABRICS—the Fabric used in Streamlined Paragon 3-ply is antiseptically treated to prevent the formation of mildew and rot. The exclusive EUREKA mildew-repellent solution used does not add to the weight of the hose . . . is absolutely reliable.

For Greater Protection to Lives and Property . . . SPECIFY

● 4-PLY LONG-LIVED RUBBER LINING

● SMOOTH-INTERIOR FILLER-PLY

● MILDEW-PROOF FABRIC

EUREKA FIRE HOSE

DIVISION OF UNITED STATES RUBBER COMPANY

1790 BROADWAY • NEW YORK, N.Y.

Branches in all parts of the United States